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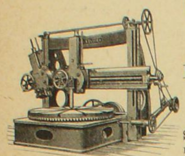

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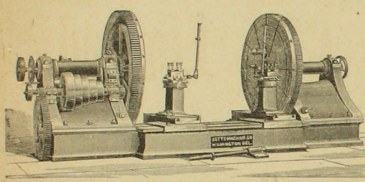

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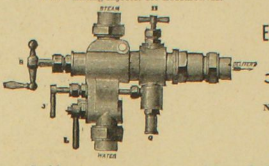

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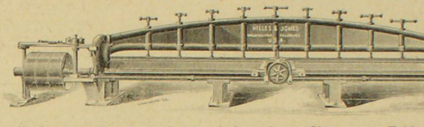

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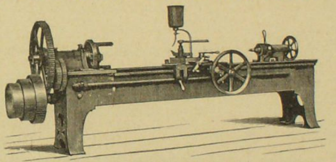

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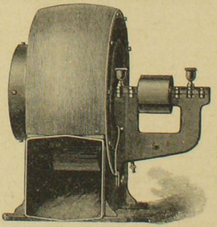

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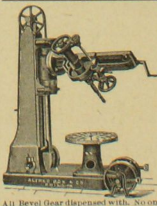

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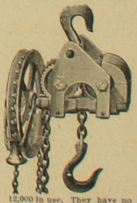

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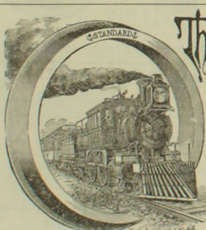

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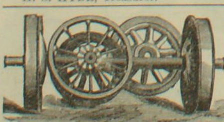

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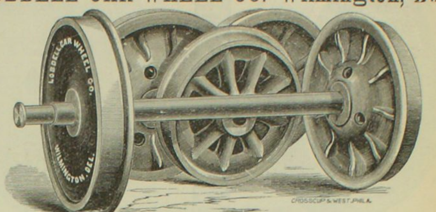

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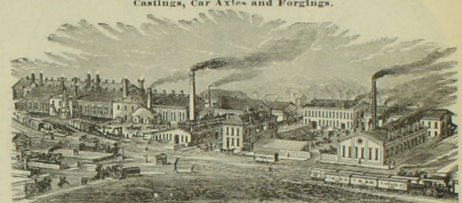

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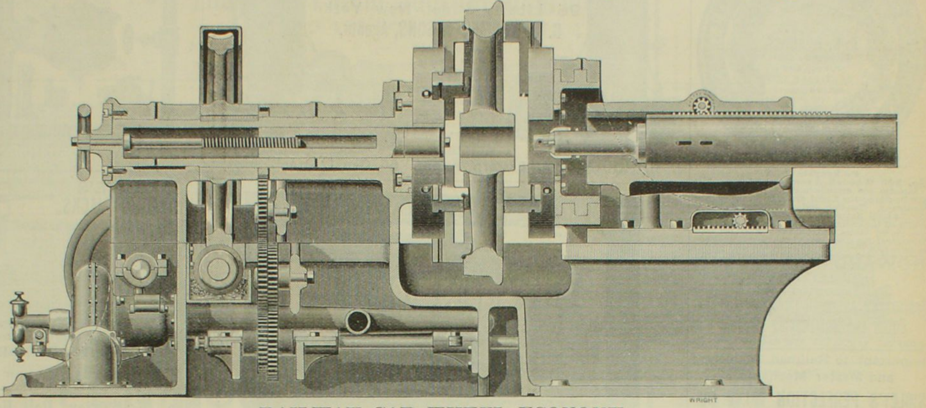

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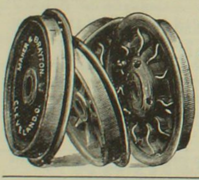

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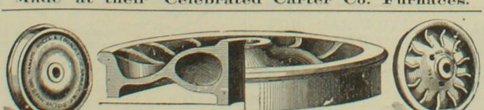

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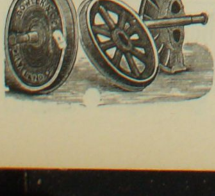

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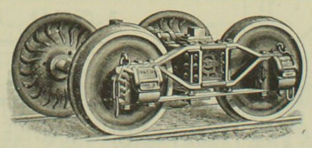

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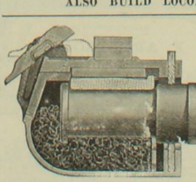

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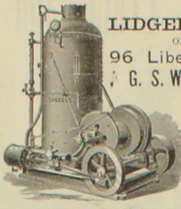

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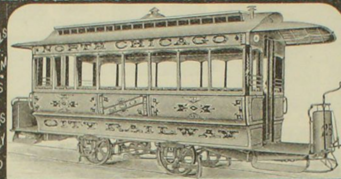

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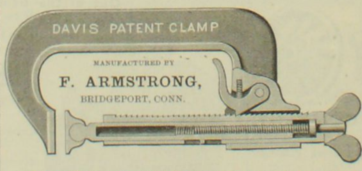

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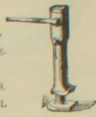

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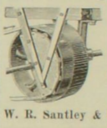

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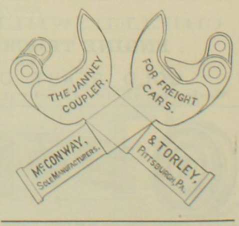

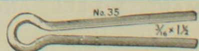

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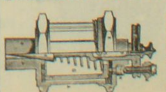

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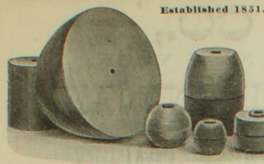

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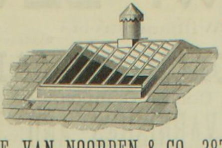

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Index to Advertisements in the National Car-Builder.

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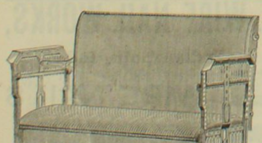

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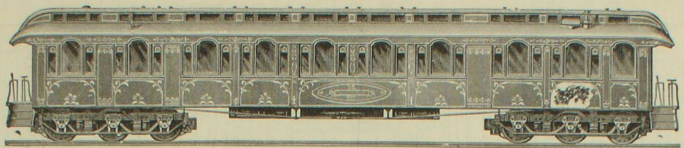


DEVOTED TO THE INTERESTS OF RAILWAY ROLLING STOCK.

VOLUME XVI. NUMBER 3. | MARCH, 1885. | SINGLE NUMBERS, TEN CENTS. $1.00 PER ANNUM.

Miscellaneous Items.

THE Canton (O.) Car Company has discontinued the business of car building, and will in future devote itself to other branches of manufacture.

THE Chicago Forge and Bolt Company's works, at South Chicago, are being operated day and night. A new boiler and furnace are being put in, to accommodate which a small addition to the works is being erected.

A NEW car-wheel foundry is to be erected by the Raleigh & Gaston Car Wheel Foundry Co., of Raleigh, N. C. The building will be 65 × 80 feet, of brick and iron. Two blast furnaces. Boiler, 60 horse-power. Calculated cost of improvement, $25,000.

THE Roanoke Machine Works, at Roanoke, Va., have nine consolidation locomotives in course of construction and nearly completed, three heavy passenger engines about half completed, and orders for three heavy shifting engines, all for the Norfolk & Western road.

AT the stockholders' meeting of the Lima (O.) Car Works, Jan. 21, no definite action was taken in regard to starting the works, but it is stated that they will be put in operation at the earliest possible time. James Irvine was elected President, and W. E. Hackadorn Vice-President.

THE Helmbacher Forge and Rolling Mills Company, of St. Louis, are running all their puddling furnaces, their scrap furnace, the small mill, link and pin machinery, and two axle hammers, giving employment to 150 men. They report orders for links and pins coming in freely from the railroads.

THE old and widely known firm of S. C. Forsaith & Co., Manchester, N. H., dealers in new and second-hand machinery, has been reorganized under the name of S. C. Forsaith Machine Co., with ample capital. D. B. Varney is President; S. C. Forsaith, Treasurer; and W. E. Drew, agent of the new company.

THE largest steam hammer in the United States was recently placed in the works of the Cleveland City Forge and Iron Co. The hammer alone weighs 20 tons, and with anvil and appendages, 340 tons. Its height is 38 feet, and diameter of cylinder 38 inches. It was made by the F. B. Miles Machine Tool Works, Philadelphia, and cost over $50,000.

"FOR some reason," says the *Iron Age*, "there has been an increased demand for old wheels, and prices have made a jump of about $1 per ton. We understand that one lot of 500 tons was sold at $17, cash, and the parties are looking for additional stock to sell at about the same figures. Brokers are willing to pay about $15.50. Railroads and holders are not offering their stock at present prices. While they were asking $16 an opportunity to sell at this figure offered, when they immediately withdrew their price."

WESTERN rivers as a highway for transportation are fast passing out of existence. Everywhere railroad bridges form continuous connections for traffic, regardless of the navigable streams flowing beneath, now almost abandoned by vessels of every description. Thirty years ago St. Louis had 60 large steamers in the Cincinnati and Pittsburgh trade, and almost as many between that point and New Orleans. At the present day St. Louis has not a single "packet"—in fact, the name itself is almost forgotten, and the total arrivals at the levees are not over 40 a week.—*Iron Age.*

THE Jones' Car Works, at Schenectady, N. Y., have contracted with the New York Central Sleeping Car Co. for the building of all new cars and repairing of old ones for that company during the current year. Thirty cars are now in the shops undergoing repairs. Mr. Walter Jones, the President of these works (which are the successors of the Jones Car Manufacturing Co.), has retained all the foremen and the best of the workmen employed by the old company, and is, therefore, able to fill orders as expeditiously and as well as formerly.

LUTHER G. TILLOTSON, the founder of the well-known railway and telegraph supply house of L. G. Tillotson & Co., died at his residence in New York, Jan. 31. He was born in Ithaca, N. Y., in 1834, and at an early age became manager of the telegraph service of the Erie Railway Co., but for some twenty years past has devoted himself to the business of his firm, of which Gen. E. S. Greeley was a member. Mr. Tillotson's ability and judgment as a merchant were widely recognized, and his opinions in reference to railway and telegraph construction were often solicited by men of prominence in enterprises of this kind.

THE fact that iron has the power to purify water and remove from it all organic matter, is one which is being turned to great account in foreign countries in constructing filters on a large scale. Iron turnings are used for the purpose. Unlike ordinary filters, one constructed with iron is said not to require frequent renewals, and continues to work long after a filter bed constructed in the ordinary method would have ceased to be operative. Its operations are chemical, the iron being slowly oxidized, and at the same time decomposing the organic substances contained in the water. The iron filters are applicable to all waters containing organic sediment of any kind. Unfortunately the alkaline waters appear to be beyond the reach of these or any other filters. In localities where the water deposits vegetable sediment, filters of this kind promise well, and according to reports that have been made, they work quite as well as the theory of their construction would indicate.

SHERBURN S. MERRILL, General Manager of the Chicago, Milwaukee & St. Paul Railway, died Feb. 8, in the 67th year of his age. He was identified during many years of his life with the growth and development of the great system of which he was the official head, having been appointed to its superintendency in 1865. His career as a railway man is a typical one, and presents a record of continuous promotion from the position of foreman of a track grading gang to one of the highest responsibility in railway service. His mental endowments were remarkable, and combined with perfect integrity, tireless energy and unerring judgment, enabled him to perform his high duties with an efficiency rarely equaled. His death has naturally caused a profound sensation in railway circles. Resolutions relative to the event were passed by the legislature of Wisconsin, and by various corporate bodies, expressive of respect and esteem for his character and services.

MR. JAMES TILLINGHAST has resigned the Presidency of the Wagner Sleeping Car Co., and is succeeded by Dr. W. Seward Webb. Mr. Tillinghast still retains the position of Assistant to the President of the New York Central & Hudson River Railroad, but will go to New Orleans and Florida during the present month, and on his return will visit Europe. He began his railroad career 35 years ago, and in all this time has not had a respite. He was first a fireman on the old Utica & New York Central. He was the master mechanic, and ran the first train on the Rome, Watertown & Ogdensburg road. He was afterward in Canada on the Northern road, and has a letter from Prince Albert whom he took through the country. He returned to the New York Central as superintendent of the western division, and never left the road again. Before he began railroading he was engaged in lake transportation, and took a vessel to Chicago in 1844, when that city was a village with only one brick house and one dock.

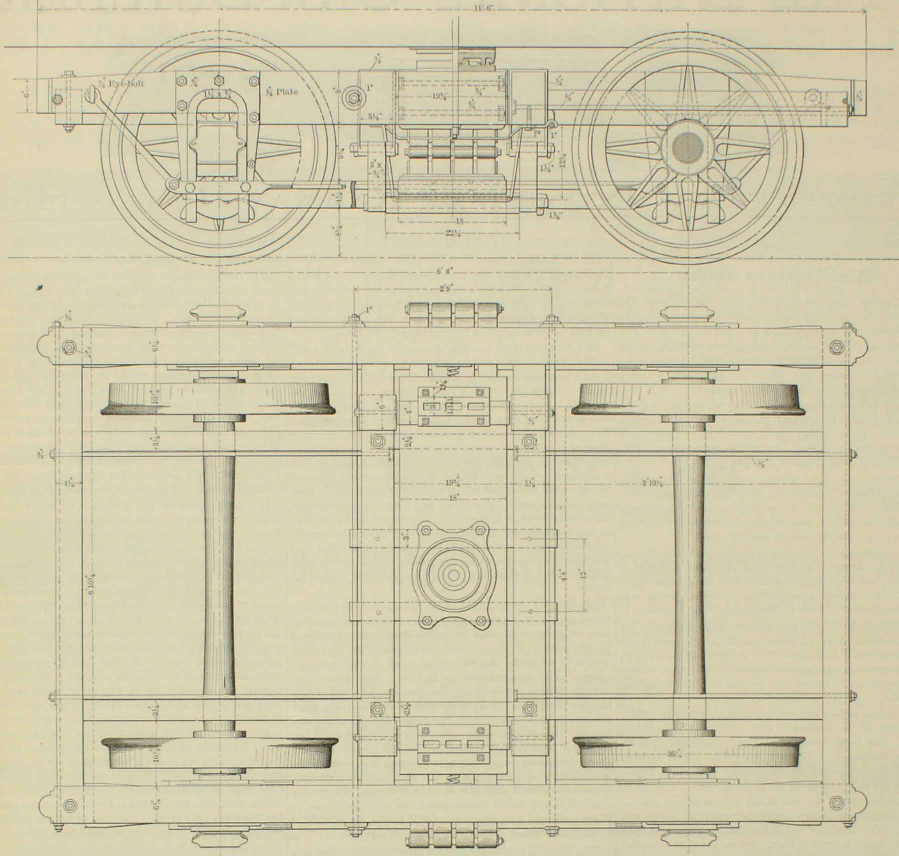
THE Old Colony Railroad Co. has just completed, at its South Boston shops, a new locomotive, to be known as No. 124, Class F. It has a steel boiler, 48 inches smallest diameter, 185 tubes 2 inches in diameter and 11 feet 2 inches long. The fire-box is 60 inches long by 35¼ inches wide inside, driving wheels 63 inches, with Midvale steel tires, cylinders 16x24, Richardson's balance valves, Seibert's oil cups, two No. 7 monitor injectors, straight smoke stack, extended smoke arch and spark arrester. The novel features are the injector checks and steam-gauge stand. They are fitted with automatic valves, which can be closed while the engine is under pressure, thereby enabling repairs to be done without blowing off steam; and if by accident the part should be broken, the valve would close from inside the boiler, preventing escape of steam. All the pipe connections in the cab are fitted to the steam-gauge stand, necessitating only one hole in the boiler.

IT is proposed to introduce a new system of tunnel roads in the city of London, the trains to be propelled by grip cables in order to get rid of the smoke nuisance. There can be but little doubt that the cable system could be used to good advantage in tunnels, and it would not be surprising if the experiment resulted in complete success. Vast sums of money have already been expended in attempts to get rid of the smoke and steam on the Metropolitan underground lines. Condensing engines for the steam have been tried but without success, and powerful ventilating apparatus is now the only means employed, but is far from being as effective as it should be. The wire cable system in tunnels would be attended with less difficulty, and could be applied in a much more satisfactory manner than it now is for the propulsion of cars on surface tracks. The grip problem would be very much simplified in tunnel working, and the wear of the ropes ought to be greatly reduced. The proposed experiment in London will be watched by engineers with much interest, and if successful, the project of a Broadway tunnel in New York may some day become an accomplished fact.

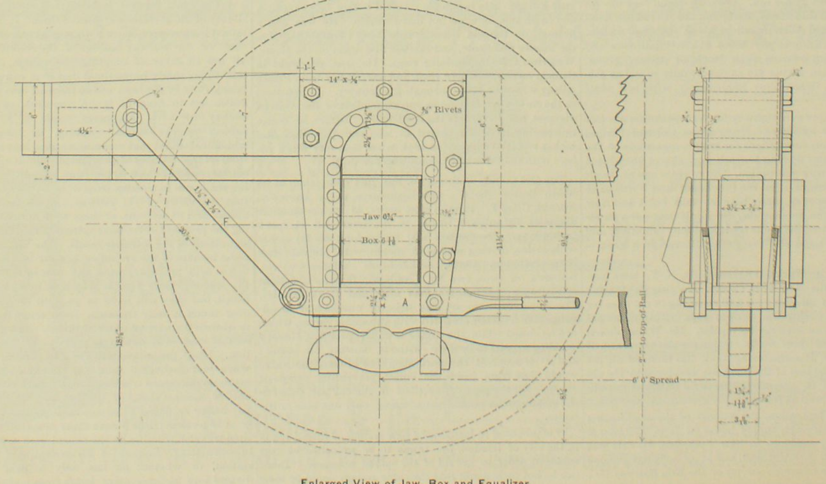
HAULAGE, both on the surface and under ground, by means of wire ropes, is one of the popular engineering problems of the day. The endless rope running on pulleys moved by a stationary engine, and constantly moving in one direction, is mechanically a very convenient means for transportation. Although when long distances are to be covered, the waste of power is large, the advantages are supposed to more than counterbalance this. On one of the New York City avenues, the Third Avenue Street Railroad Co. are putting down several miles of track, together with stationary engines, etc., in order to test the value of the proposed cable road. If they find it successful, they promise to extend the road down town. The first experimental cable road is to be five or six miles long, and is expected to cost at the rate of $100,000 per mile. The work is now being done with a thoroughness which is likely to make repairs insignificantly small for years to come. One novel feature is adopted. The road is to have two cables in the tube all the time. One of these is to be used and the other, at one side, held as a reserve. By this means a rope may be run until it is nearly or quite worn out. When desirable, the change to the other rope is made, and the worn rope repaired or renewed at leisure. When only one rope is used, it must be replaced long before its life is gone, and before it is in danger of accident. The reason for this is the fact that to replace it takes a long time, during which traffic is liable to be interrupted. Ropes in fair condition and capable of much work have to be thrown out for fear of accident, which would block the whole system.

A GROWING interest is being felt in regard to the feasibility of the 24 o'clock system of time. It has been ascertained by correspondence with parties representing 47 per cent. of the railway mileage of the country, that nearly all are in favor of adopting the system, and in view of this it may safely be assumed that if a canvass could be taken, fully 90 per cent. of the railroad men of the United States are in favor of it. A committee of the American Society of Civil Engineers made a report on the subject at the annual meeting, in January last, in which it is stated that communications had been received from a large number of prominent men in all parts of the country, and of these 92 per cent. were in favor of counting the hours in a series from 1 to 24. It is also stated that the views of 171 railway officials had been ascertained, and 98 per cent. of these were in favor of abandoning the present twelve-hour system. These indications are significant of the ultimate result. The change is sure to come in spite of the prejudice against it. Some Western towns will probably resist the innovation, as they did the standard-time system which is now so well established, but they will have to go with the current, however much it may threaten, from their point of view, to disturb the natural order of things. The apprehensions on this score will doubtless prove to be without foundation. Local prejudices will yield to general convenience when it is discovered that with the new system it will make no difference whether a man's clock is 35 minutes or only 30 minutes ahead of the sun, nor will his appetite be any better or worse if he eats his supper at 6 o'clock P. M. or at 18 o'clock. But it does make some difference with a tired traveler whether he has to deal with A. M. and P. M. in calculating the time of his arrival at a distant way station, or whether he has only to deal with a day divided into 24 consecutive hours from midnight to midnight.

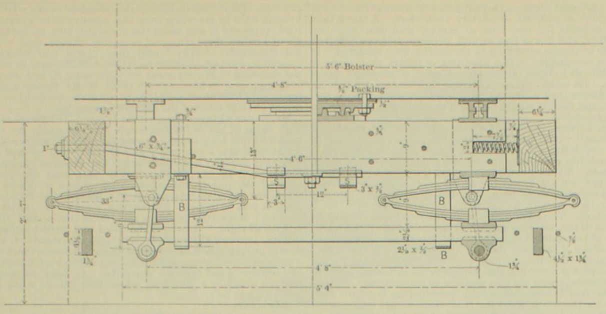
PASSENGER CAR TRUCK, BUILT AT SKABO CAR WORKS, CHRISTIANIA, NORWAY.



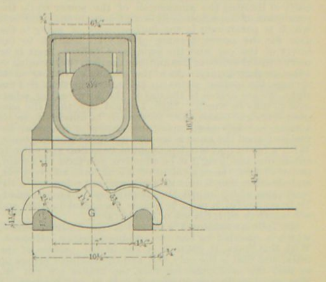
Side Elevation and Plan.



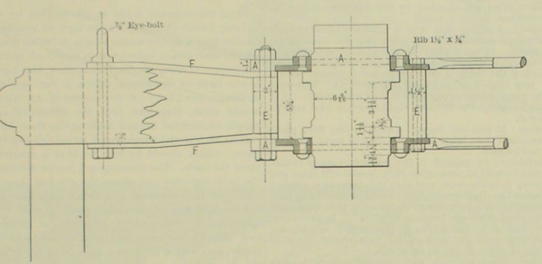
Enlarged View of Jaw, Box and Equalizer.



Cross Section.



Section through Box and Equalizing Stirrup.



Plan of Box and Jaw.

The October number of the CAR-BUILDER contained illustrations of a second-class passenger car, built at the above-named works, at Christiana, Norway, but showing only a perspective view and iron under-frame of the car. We have since received drawings of the trucks, which present a combination of European and American practice that will doubtless be of interest to our readers. Certain features have been introduced by reason of the conditions of manufacture; but in principle, the truck is modeled upon purely American lines.

The equalizing bars, the elliptics upon the bolsters, the swing motion, side bearings and safety-beams are essentially similar to those used here, and the casual reader glancing hastily at the drawings might catch but few points of difference. The first point to attract attention is the size of the wheel-pieces, which are nearly two inches thicker than those in common use here. They are, however, of the ordinary depth. The end pieces are straight and the safety-beams are put in as is usual here. Whether this increase in the weight of the side sticks and other members of the frame is due to difference in the quality of timber we do not know. If the material is of first quality, a considerable increase in the stiffness is doubtless obtained. The iron work of the swing motion does not differ in any material respect from the common practice here, except in two particulars. In the trussing of the transoms but two rods are used. These are placed on the outside of the transoms, and under ordinary conditions have a tendency to cant or twist the timbers and make them bind the bolster by lifting up the outside edges. In this truck the braces *S S* are bolted to the bottoms of the transoms, holding them in position, while their ends project and form stirrups to hold the truss rods. This prevents any twisting of the transoms and obviates the necessity of putting in an extra pair of truss-rods. The braces are bent downward about 2¼ inches, to leave space for the vertical motion of the bolster. Outside of these, and close to the hangers, are a pair of straps *B B*. These straps are bolted to the transoms with through bolts, and go down under the spring-plank. They perform the office of a safety-hanger. The only other feature of this portion of the truck, specially different from common American usage, is the 2-inch spiral spring, nearly 8 inches long, which is placed in each end of the swing-beam. This has a bearing against the wheel-piece, and is used to prevent violent motion and shocks in taking curves. One or two roads in this country formerly used springs in this position, but they were, if we remember rightly, considerably shorter and much stiffer than these appear to be.

The jaws and their braces, together with the equalizing-bars and the stirrups by which they are connected to the boxes, are decidedly novel to an American. The details of these parts will be found in Figs. 4 and 5. The jaws are double and are bolted to each side of the wheel-piece. They consist of a ½-inch plate in which a U-shaped strap ¾ of an inch thick is riveted, to strengthen the inside edges. Their bottoms are connected by the strap *A A*, Figs. 4 and 5, in which they are bolted. A pair of thimbles *E E*, with corresponding bolts, connect jaws on either side of the wheel-piece to each other. The braces *F F* are fastened to the wheel-piece, while a continuation of straps *A A* form the ordinary jaw braces.

This peculiar construction seems to result as a necessity from the use of plate-iron jaws instead of a cast-iron pedestal. The straight equalizer seems to present a variety of advantages, especially where large wheels are used. Over the box, a strap 3½ inches wide is passed, which drops sufficiently below the box to hold a saddle-shaped piece *G*, on which the equalizing-bar rests. The ends of the strap are punched out to form stirrups to hold the ends of the saddle. A convex ridge across the top, with a corresponding seat in the end of the equalizer, allows the axles and boxes to rise and fall independently, while still preserving a central bearing. Although the wheels of this truck are only 36½ inches in diameter, this peculiar feature of the construction appears to have been adopted for the express purpose of permitting a very large wheel to be used without unduly raising the truck frame. The top line of the wheel-piece stands but 31 inches above the top of the rail, while many American trucks, with 33-inch wheels, stand from 35 to 36 inches high. The standard truck of the New York, Lake Erie & Western is 35½ inches, according to the standard drawings, and the standard four-wheeled passenger truck, on the Baltimore & Ohio road, is very nearly 37 inches to the top of the wheel-piece.

The body of the car rides very low, the lower edge of the sill coming within 35 inches of the track. This small height seems to be made necessary by the method of entering the car. The lower step is formed by the running-board; above this a small step is placed, which practically gives three risers from the platform or from the ground to the floor of the car. The details of the truck are as well worked out as those of the car frame itself, and are very suggestive.

Master Car-Builders' Club.

FREIGHT TRAIN BRAKES.

At the regular meeting of the club, held on Thursday evening, Feb. 19, the President, Mr. Leander Garey, announced the subjects for discussion to be "Freight Train Brakes, and Standard Freight Car Bodies and Trucks."

A communication was read from Mr. L. W. Goss, of Cincinnati, General Manager of the Waldumer Electro-Magnetic Brake Co., containing statistics of train accidents on the railways of the country, and the damage, loss of life and injuries resulting therefrom. The communication concludes as follows:

Within the past few years locomotives have been made heavier and stronger, and able to pull longer freight trains; and the statistics show that the proportion of freight cars to the number of locomotives has increased 50 per cent within the last eight years throughout the United States. This greater number of cars to the train increases the danger of separation of trains in two parts, and the number of accidents will increase rather than diminish unless continuous brakes for freight trains shall be adopted.

We claim for the Waldumer Electric Brake, that it has all the features of a continuous brake to perfection, and that in addition, there can be no separation of the cars in the train to a greater distance than 2½ feet without sounding the bells and giving immediate warning to both engineer and conductor. Further than this, the engineer and conductor can at all times signal each other by the electric bells, avoiding the necessity of the old form of conducting the train by hand or lamp signals. In this connection, it is only proper to state that very material improvements have been made in our system within the last two years, and we shall not hesitate to guarantee its operation as set forth in our report. It can be furnished at figures which will justify its adoption.

There may be that some master car-builders look with more or less favor on some "bumper" brakes. To such it ought to be said that we give our device especial praise because the stops are made without permitting the cars to strike against each other. The very principle of the bumper brake is to the contrary. It requires that the locomotive shall first be "held back," or reversed, and that each car strike against the other to set the brake, neither of which things should happen. Stephenson, the inventor of the locomotive, invented the first bumper brake, and for reasons above stated, abandoned it. We believe that the generality of railroad officials of the present day agree that the essentials for the operation of such a brake are so contrary to good railroad management as to forbid its use.

Mr. Ford, the inventor of the Ford Automatic Air Brake, described its construction, illustrated by drawings, and explained its operation and the advantages claimed for it over other devices for a similar purpose. An intelligible idea of its working can not be given without detailed drawings. He narrated some particulars of its performance on the Denver & Rio Grande road, as compared with the performance of the Westinghouse "Ultimatum" brake on the same road, showing that his brake made the quickest stops. He thought by distributing the air cylinders along the train, the entire train could be stopped as if it was a single car. Brakemen would have to be on the train to operate the brake, and he could not see why his system was not a step in the right direction.

Mr. Forney said: I do not think a system of brakes operated by these air stations, which must be attended to by the brakemen, can be depended upon. A good illustration is the signaling the rear end of the train. It is impossible to have the rule observed, that a man shall go back to protect the rear of the train when it comes to an unexpected stop. I know of an occasion where a train stopped unexpectedly, and the brakeman was sent back on the track to signal any train that might come along. He went back and waited a while, but getting tired, sleepy and chilled, he returned to the train and went to sleep. Soon a train came along, a collision resulted, and the brakeman was killed. You cannot enforce that rule with any degree of certainty. I should say the same in reference to the line stations along the train. The brakemen would be absent just at the time when they were wanted the most.

Mr. Ford: In that case you could fall back on the working of the brakes at different stations by some simultaneous action like the electrometer. This, however, would have the effect of complicating the brake system and increasing the first cost and cost of repairs. I have shown that I could stop one section as quickly as any other system, so that the fact that you cannot stop a whole train because the brakeman would not apply the brakes at the same time, is hardly applicable. You never can apply the Westinghouse brake to a number of sections, because it can never be applied alike, and does not equalize the pressure in the different sections.

Mr. Partridge: How many cylinders do you think you could operate from one reservoir?

Mr. Ford: I can not give any actual data on that subject. The greatest number I have operated is 12. I have only had one trial. I should judge I could operate from 30 to 50, according to the size of the cylinders and the quantity of air which would have to be taken out of the system in a given time.

Mr. Garey: It appears to me that to secure effective service from a train brake on freight cars, the trains must necessarily be small, and the system introduced gradually and for a special purpose. In other words, a railroad might choose to run express freight and keep a certain number of cars for that special purpose, and apply a train brake and run their trains at 25 or 30 miles an hour successfully. At present, it appears to me that there are so many difficulties attending the successful application of any train brake that has been brought to the notice of the public, that railroad companies would not be warranted in attempting to do it, except with express freight, charging for such freight a price that would pay for the service.

Mr. R. M. Agnew (representing the Rote automatic brake) said that continuous brakes are utterly ill adapted to freight service, however useful they may be in the passenger service. The wants and requirements of the two branches of service are essentially different, and vitally so. If this be true, it necessarily follows that the successful freight brake must be independent in its action. To produce an effective and reliable brake, or any independent brake, there are only three sources of power available. These are the revolution of the wheels and axles, the settling of the car on its springs, and the movement of the draw-bar. The objections to the

use of the first are in some respects obvious. The difficulty of limiting the application of the power while the revolution of the wheel or axle continues, is one; but that which is paramount is the inexpediency of going to the axle for the power, because of its vital relation to the safety of the car and the train, as I believe there is no more fruitful source of loss and damage than the breaking of axles, or their injury. As to the settling of the car on its springs, the motion seems to be limited so that, if I am right, we are driven to the use of the draw-bar for whatever it may be worth. Then, I would say, that the successful freight brake must necessarily be automatic in its action; not dependent upon any system or operation dependent upon the knowledge and instruction of employés. With a brake that is independent in its action and entirely automatic, assuming it to be effective, you have on a train, say of 25 cars, the equivalent of a brakeman on every car, and also that which does its work without reference to the conditions which impair the effectiveness of human labor. To be successful, it must be simple, cheap and durable, and not interfere with the use of hand-brakes.

Mr. Tallman exhibited a model of the Tallman brake, which is operated by the cars coming together. He said: With this brake, if there is a car in the middle of the train, and that is the only one, and the engineer brings up so that the cars come together, the brakes are put on. You can handle any number of cars in any position. I claim that to have a successful brake, the engine should be equipped with a driver-brake of some kind. Any good driver-brake that will hold the engine must compress the draw-bars, and the pulleys which operate the brake come together, and the work is done.

Mr. Garey: I would ask if there are not certain conditions of grade in which the independent automatic train brake is detrimental to the movement of the train? For instance, where you come to the foot of a grade with a very abrupt up grade, as there is on some roads, would not a part of the train have the brakes on and a part off, and stall the train by making it impossible for the engine to haul the brakes off?

Mr. Tallman: In answer to that I would say simply this. The engine does not have to pull a pound. As soon as the pressure is off the draw-bars, the brakes are released, and when the bumper is in its normal condition there is no pressure on the brakes.

STANDARD TRUCKS

Mr. Forney: It has been for a long time a burden of complaint upon the part of newspaper men, that the railroad men did not adopt standards for various things. We have several hundred railroad companies composed of some very intelligent men, and some not so much so. We have to bring them together and get them to agree upon certain dimensions for a standard truck. The problem is not quite so easy as it appears. These people all have different ideas, and you must reconcile those ideas. How can you do that? At the present time, the Car Builders' Association have not been able to agree on a standard truck. If there is any device or method by which you can get these people from all parts of the country together, and get them to think alike, I would like to know what it is.

Mr. Partridge said that the reason why railroad men had different ideas on this subject was because there were different conditions of service to be met. A truck that was suitable for one kind of service was unsuitable for another, and it was just as well, perhaps, to have different kinds of trucks according to the service to be rendered. It was a recognition of this condition of things that made it so difficult to bring about the adoption of proposed standards. He would suggest that when a standard truck is up for discussion, it should be limited to some specific service, and then it would be found much easier to come to an agreement.

Mr. Forney: Perhaps if we should adopt two standards, the result would be more satisfactory. The committee of the Car-Builders' Association have under consideration a truck for cars that are to carry not exceeding 40,000 pounds. My own conviction is that if that committee does its duty, we are nearer the adoption of a standard truck than we ever have been. At the next annual meeting some action will be taken to submit some plan for a standard. The advantages to accrue from such action, it seems to me, are very great. It is entitled to all the attention of the railroad managers, and it certainly would have the effect of reducing the cost of trucks; and if the different parts of all the castings were of a uniform pattern, the consequence would be that founders in different parts of the country, who are in a position to manufacture castings at the very lowest cost, would manufacture standard castings for the truck, knowing that there would be a market for them. I think also that the cost of repairs would be very much reduced if we had a standard.

Mr. C. A. Smith: I would like to suggest one thing, and that is, that you ask each car-builder if he will abide by the standard after it is adopted by the Association. If he don't, it will not do much good.

Mr. Forney: I admit that it is a difficult thing to get people to adopt standards even after the Association decides on them. It is a matter of moral suasion only, and my own experience has been that people are quite willing to go into it if the thing is only presented to them. Occasionally you will find a wrong-headed man. The only thing is to keep hammering away year after year. It is impossible to keep the fellows right-headed who are entirely wrong.

Mr. Smith: If you can fasten a man in the first place after a standard has been adopted, he will want to back out of what he said.

Mr. Partridge: In regard to the manufacture of standards, it may be well to remember that people will skim and skin in every possible way, and that this process is applied to the Master Car-Builders' axle as well as everything else. It is impossible for a founder at the present time to manufacture anything simply because it is M. C. B. standard. There are minor deviations to fit ideas and conditions, which are just sufficient to keep the patterns of one road from filling the specifications on another.

Mr. Garey: There are very many advantages in having a standard, even if it is not the same on all roads. In the interchange of traffic we get cars from so many roads in the shops of one road, where, if they attempt to use other standards, the standard used on that road can be applied, and they dare not ask any questions. There is an immense advantage, which I think outweighs very materially the difficulties in having the standards vary a trifle. I found once in traveling over the country that a certain road supposed it was using the standard, and in looking about I called their attention to certain things that were not standards. "Why," said they, "will you be kind enough to send us dimensions, so we will be sure to have the standard? We supposed we were using it, and we are sure we meant to have it." I think if Mr. Smith would try to enlighten these people as to what the standard is, he might obviate some of the difficulty presented.

Mr. Smith: I do not know that I could enlighten anybody upon it, but as long as people will not abide by the standard that they know *is* a standard, what can we do? Some time ago, I was in a man's foundry, and he had an order for so many hundred Master Car-Builders' journal-bearings, 3¾ inches diameter. The man sent the order back to the purchasing agent, and wanted to know if there was not some mistake, as the Master Car-Builders' journal was 3¾ inches. The answer came, "My order is correct. Make your bearings as I order them, and they will be all right." I believe that man was right in enlarging his journal, although it was not the standard, and others probably will do the same thing. I know there are a number of different patterns known as Master Car-Builders' standard, and they are not alike. As long as people will not abide by a standard when they get it, what are you going to do?

Adjourned.

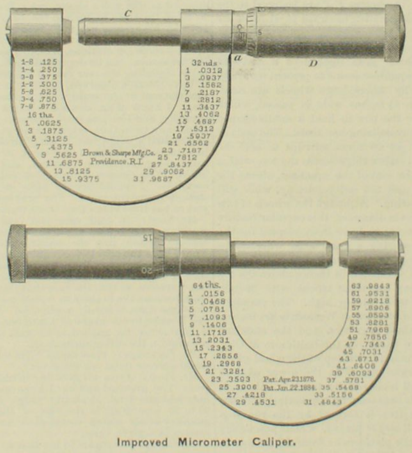
Car-Framing.

From experiments made in pile-driving by Capt. Otis, at Long Island City, some years ago, he reached the conclusion that a timber would broom or batter when striking a fixed obstruction endwise at a speed of about 25 miles per hour. With a wooden frame, then, this may be taken as the limit of resistance which a car can make when striking a fixed body of the nature of an iron plate. It would seem, therefore, that the efforts of car-builders should be directed toward making the floor and sides of cars as high as the window-rail, as near as practicable, one piece, which should be able to bear a maximum blow upon the ends. The trussing and braces necessary to hold the parts together and secure the greatest strength on the joints of the material, will be all sufficient for keeping the car in shape. Truss-rods should be used, especially in long cars, since they enable a better and stiffer construction to be made in wood, as they hold the car up directly, and with a minimum amount of material the wood can be disposed to the best advantage relative to the direction in which the heaviest shocks are likely to be received.

Bearing these principles in mind, in considering the different members of the car frame, we find that an entirely new light is thrown upon the functions of several of these members. Probably no single one of them has been more misunderstood, or used in a more useless manner because of such misunderstanding, than the truss-plank. Its purpose is generally taken to be what its name indicates, and many efforts have been made to make it do what it is supposed it is intended to do. In the shorter and earlier built cars the truss-plank was able, undoubtedly, to carry, not only its own weight, but to be practically equal to the support of the whole car load. In 40-foot cars, truss-planks as ordinarily put in might support a load of 4,000 pounds. This weight is manifestly so small that the builder at once comes to the conclusion that the plank is a useless member in the car. But even with this small load-carrying power the two truss-planks are able to carry, unaided, the ordinary load of a 60-passenger coach which would come between the bolsters. In fact, the evenly distributed load is so small, that almost any pair of timbers in the floor of a car will support the weight. Had the truss-plank been intended solely for its load-carrying capacity, it would long ago have ceased to be a part of a passenger-car frame. Its real object is to form a support, a packing piece, and butting strip, by which the posts may be firmly secured to the inside walls. Even when halved upon them—a practice condemned by very many builders—the plank is an invaluable aid in solidifying a point in the car frame which would otherwise be comparatively weak. The ordinary practice of putting two lag screws into each post, with many vertical bolts holding the truss-plank to the sill, makes a connection, the security of which cannot be exceeded by any other method of construction, except with the very best of workmanship. In many styles of car which have proved to be thoroughly sound in principle, the truss-plank has been abandoned, but in doing this certain other features of construction have been introduced—usually a system of bracing which puts on arched trusses or straight braces with knife-joints upon the posts. The posts are thus held firmly in place, and by means of window rails, heavy paneling inside and blocking put in with glue-blocks a rigidity is secured and a union of parts obtained which is equivalent to the truss-plank. In the support of the corner, however, and in protecting the end of the car when striking an obstruction or going off the track, a sufficient substitute for the truss-plank can hardly be found. It may therefore be considered an exceedingly valuable member of the car frame, and in an economical point of view cannot well be replaced by any other form of construction.

The floor of the car is essentially a battering-ram. The other work which it has to do is so trivial, comparatively, as to be hardly worth considering. Mr. Garey's plan of bending or springing one of the intermediate timbers so as to form a horizontal arch or brace, and then holding all

(*Continued on page 34.*)



Improved Micrometer Caliper.

The Brown & Sharpe Manufacturing Co., of Providence, R. I., have just introduced the new form of micrometer caliper shown in the illustrations. This differs somewhat from the old instrument of the same kind which they manufacture, the jaw being semi-circular, or U-shaped; which gives facilities for measuring thicknesses further from the edge. The most important improvement, perhaps, is the arrangement by which the thread is entirely covered. Not being exposed to dust or dirt, and not being liable to be injured in handling the instrument or in taking the thicknesses of rough surfaces, the tool becomes a practicable one for any kind of measurements, and need be treated with but little more care than the ordinary wire gauge, while it preserves all its former accuracy. The one feature which will be appreciated by all who have ever used a micrometer gauge, is the stamping on the surface of the form of decimal equivalents of 8ths, 16ths, 32ds and 64ths of an inch. They are thus constantly in sight and there is no danger of the table being lost or mislaid.

By withdrawing the graduated sleeve *D* to the end of the arm, adjustments for wear can be made by means of a small wrench which accompanies the tool. Those who have been familiar with the old form of micrometer calipers will understand the improvement made in substituting the plain cylinder *C* instead of a projecting screw. At *a*, is seen a portion of the graduated scale which is uncovered by the sleeve *D* as the instrument opens.

Every one who has had occasion to use the ordinary wire gauge in ordering sheet metal or wire, understands the great difficulty which is met with in getting the precise thickness of metal which is wanted when an order is made out by gauge numbers. Usually a thicker metal is sent than it was intended to call for, but the price is made to correspond with remarkable accuracy with the order itself.

By giving the order in 1,000ths of an inch, as this machine enables one to do, the chance for inaccuracy is taken away, and there is no opportunity to attribute manifest errors to the wear of gauges. The wire seller's gauge, being in more constant use than that of the buyer, invariably and to his own advantage, wears larger without his being able or desiring to detect it. This, added to the fact that wire gauges are not accurate, and can not be made so at their ordinary prices, is a sufficient argument in favor of a different system of measuring. The micrometer caliper has the advantage of being self-detecting in the matter of wear, and is easily adjusted when wear takes place.

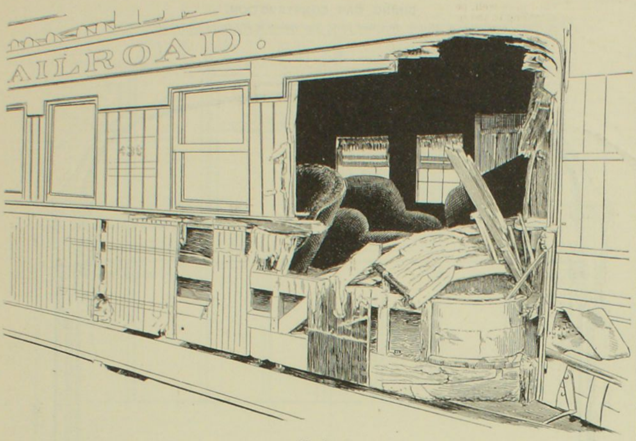


Fig. 1.

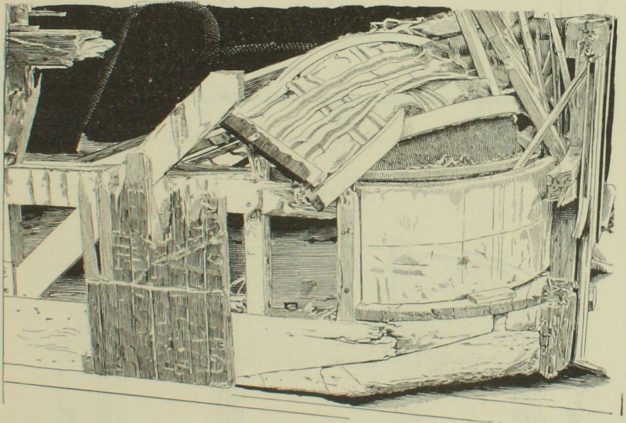


Fig. 2.

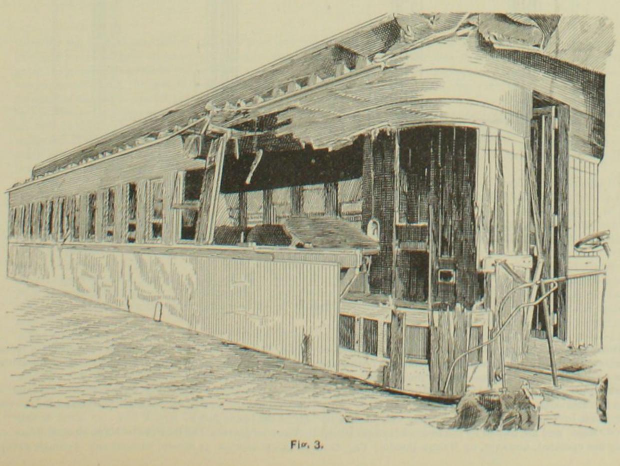


Fig. 3.

Wrecked Passenger Cars of Philadelphia & Reading Railroad.

THE CAR-BUILDER for March, 1884, contained an illustrated description of the round-cornered passenger cars of the Philadelphia & Reading road. A careful examination of the method of framing, which was shown in an engraving made from a photograph taken in the shops, led to the conclusion that the round corners, when well put together, would resist the shocks of collision better than square corners, by causing the blows to glance off instead of being received squarely and directly. The correctness of this conclusion has been justified by the accident to the passenger express train which recently occurred on the Jersey Central Division, at Greenville, in which the strength and superiority of this style of corner construction was fully demonstrated.

The accompanying engravings, produced from photographs taken immediately after the accident, will afford, perhaps, a better idea of the condition of the cars in regard to this feature of their construction, than any mere description would.

Fig. 1 is a view of one end of the drawing-room car, with the débris in place, just after the car was removed from the wreck. The corner shown is formed by cutting off the end and side sills and framing in a solid piece of timber, the same being connected with the two sills by a ship-splice. Above this is a heavy piece of ash cut to shape, and on the inside a piece of bent mahogany forming the finish. Outside of the panels the rails go in in the usual way. This car was the one which plowed up the ballast before turning over, and both of its corners received severe usage, the timber being ground off to the extent of three or four inches, as shown in the cut. The light window-rail is broken and splintered back to the second window, and the window posts, as might have been expected, have been forced in. Although the shock was sufficient to twist and bend the platforms, the corner of the car held its own remarkably well.

Fig. 2 shows on an enlarged scale the condition of the corner of the frame, and how the wood was worn and battered where it came in contact with the coal cars.

Fig. 3 is a view of the day coach which was in the train. By a curious coincidence, this was the same car of which we published drawings a year ago. It was turned over on its side, three window panels were smashed, and the platform hood jammed and bent. Although badly splintered and pretty thoroughly peppered by the flying coal from the coal cars that were standing on a side track, this car escaped serious injury, except the breaking of glass. The fourth car in the train merely had its glass broken, and some of the underwork removed. The smoking car went into the crash with its baggage end forward, and having a door in the side, the weakness of this form of construction was made apparent. The end sill was broken and the square corner taken off, the sill not being reinforced by the truss-plank.

It might be expected that upon most roads an accident of this kind would cause the cars to take fire from the upsetting of the stoves. But upon this road it has been the practice for many years to carry the stoves or heating furnaces underneath the cars instead of inside, the greater safety of which was practically demonstrated in this accident. When the truck went from under the smoking car it took the heater along with it. One other car was burnt a little in the paneling, possibly by resting on some coals thrown from the engine. The clearing of the cars from the stoves, however, certainly insured their safety. These stoves are held to the car-body by four light bolts, and as they are but a short distance from the track, the dropping of either end of the car takes them off at once. One of the cars which turned over upon its side as it struck, went through the wreck without losing its stove, although the plaster of Paris packing was pretty well shaken up. The iron trucks which we illustrated last year, although roughly handled, came out in remarkably good shape. One of them under the drawing-room car had a pedestal broken and one or two of the boxes, but was in sufficiently good condition when put back on the track to carry the car four or five miles to the shops.

The roofs of the cars stood the ordeal admirably. Although they were severely shaken, and in one instance the force of the shock was so great as to rack the car frame and push the posts slightly out of plumb, the roofs were left entire and their joints were only started in one or two places. The roof finish of the drawing-room car had its joints opened where the partitions were torn away. Except the damage done to the finish by the coal, and the tearing away of the partitions by the cars falling over, as shown in Fig. 3, the roofs are apparently in as good condition as they were before the accident. None of the glass globes of the glass burners were broken, nor were any of the fixtures in the roof injured to a perceptable degree—a sufficient evidence of its solidity.

MANY of our roads express a desire to improve their tracks as fast as their means will allow, and the demand for Railroad Fastenings is steady at last quotations. Quite a number of orders will be given for new rails to be laid the coming summer, which, together with some new roads, will no doubt cause activity in railroad supplies in this section.—*Iron Age.*

Car Framing.

(*Continued from page 32.*)

timbers in place by an intermediate floor cut in between them, makes one of the strongest floors which have yet been proposed. Sheathed up below with matched stuff, and covered on top by one diagonal and one longitudinal layer of floor boards, the floor itself becomes practically a single piece of timber or nearly so. Each stick is continuous from one end of the car to the other. They are protected at the ends with a heavy stick of oak, which cushions and protects them, and they are held against springing in any direction from the force of an end blow. Vertically, their depth is sufficient to make them carry their own weight easily without sagging. In a butting collision with a locomotive, such a floor is not likely to suffer more than the engine itself, as has been shown by one or two notable accidents.

Mr. Kirby, of the Lake Shore road, has a method of forming the sides of a car by halving whitewood panels upon the posts, putting them on horizontally, and then after scratch-planing, glueing the vertical panels upon them. This makes an exceedingly good truss and secures immunity from breakage in case of accident. A car finished in this way could be dragged a long distance on its side, or could be turned over and receive very heavy blows before seriously breaking up a side paneled in this way. Perhaps the only objection to it is the difficulty of removing the outside panels in case it becomes necessary.

In designing the car floor, no attention need be paid to the severe transverse strains which many builders suppose are produced by end blows. The light rods necessary for holding the timbers in place are more than sufficient to resist all these strains. A moment's thought will demonstrate this, since the rods are more than sufficient to break the timbers transversely, and more strength than is necessary for this purpose is useless. If the end be driven in so as to split the car floor and spread the side sills, the maximum strength needed in the tie-rods is only sufficient to cause the beams to break by the wedging action. The floors are more than strong enough to resist any tendency to crush the car sideways, hence the uselessness of putting in numerous cross timbers. Even with car floors framed longitudinally, there are at the present day many roads and builders who use a bastard system of cross-framing which loads the car floor with useless lumber, and makes it necessary to weaken the sills with numerous mortises.

If a car floor is to stand only longitudinal strains or blows, it will at once be asserted that there is no necessity for continuous sills, since a ship-splice might be made to give a very good resistance to an end blow. This is true, but unfortunately, a ship-splice as commonly made is excessively weak in some directions, and in 90 per cent. of all the cars which have spliced sills, the splice is weakened by clamps gained in to the top of the timber, and by large countersinks made to receive nuts and washers which come flush with the outside. In this way the area of resistance in the splice is probably reduced by more than two-thirds the strength of the timbers. A vertical local resistance is essentially necessary in all car-floor timbers, for the reason that in going off the track or in meeting with any accident which drives a truck out from under a car, they are, at any moment, liable to have a large amount of weight thrown upon a point for an instant. If the under sheeting is not well put on, or if the timbers are locally weak, a car wheel, the corner of a truck, a stove or a boulder, if the car is off the track, may be driven through the floor and the car practically wrecked by a local weakness. With cross-framing and with splices, the sill is made locally very weak, and the strength of the car is thereby reduced to a dangerous extent; hence it may be held that a sill made with an ordinary ship-splice, and not reinforced by iron or by a second timber, is a defective form of construction which ought to be discountenanced.

In regard to window-braces, there is much to be said on both sides, and the reason why no definite conclusion has been reached is probably because both sides are right. Properly constructed window-bracing makes a car wall strong, stiff and durable. A properly constructed car wall without window-bracing, but with trusses, arched trusses, or rails properly put on and carefully secured by blocking with panels glued in place, is also durable, stiff and strong. Rails alone, although with a considerable amount of gluing, do not, in the hands of many builders, seem to give quite as durable a car wall as could be desired, and for this reason have been abandoned by some. Others, however, manage by their use to keep cars up for years, and that, too, without truss-rods, which goes to show that construction and attention to vital details may produce quite as good a result by one method as by another.

(*Remainder of article in next issue.*)

J. M. JONES' SONS, builders of street cars at West Troy, N. Y., have orders in hand for about 200 cars, a large number of which are in course of construction, and will go to San Francisco, Detroit, Buffalo, Erie, Toronto, and other places. Those yet to be built are for street railways in Boston, Brooklyn, Milwaukee, Baltimore, St. Louis and Cleveland.

DINING CAR CONSTRUCTION.

Boston & Albany, and New York, New Haven & Hartford Railroads.

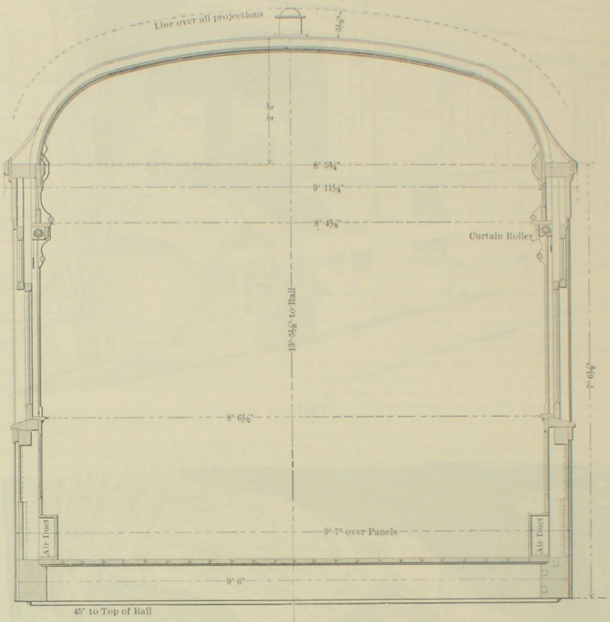


Fig. 1.

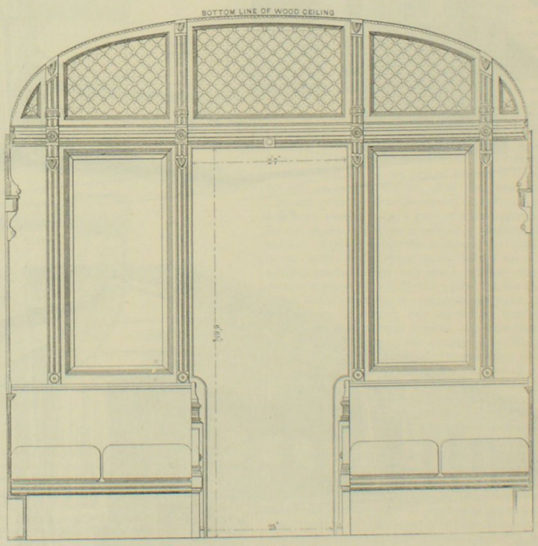


Fig. 2.

The Boston & Albany, and New York, New Haven & Hartford Railroad Companies, have established during the past year a dining-car system on their lines between New York and Boston. The engravings illustrate the distinctive features of the two dining-cars that are used. They were built by the Wason Manufacturing Co., at Brightwood, Mass., and are owned by the two roads respectively. They are operated, however, by Mann's Boudoir Car Co., under a lease, and exhibit in their construction some peculiarities that are worthy of note as being a departure from ordinary practice.

Fig. 1 is a cross section; Fig. 2 shows the buffet end of the dining-saloon; Fig. 3 the outside panels and finish; and Fig. 4 the inside finish.

The roof is similar to that of the Mann cars, and has an elliptical section, as shown, without any openings except

Fig. 3.

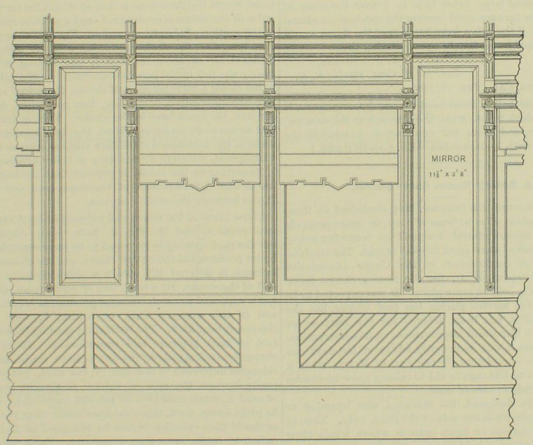


Fig. 4.

those for the central ventilators. The carlines are made of single pieces of ash, steamed and bent to shape; the grain is straight from end to end, and the shape is a good one for securing the carlines to the plates. The general framing of the car is similar to that of the long cars built by the Wason Co. The necessity, however, of putting an air-duct on the inside of the posts of the floor, modifies the construction slightly, and a truss-plank about two inches thick is halved upon the posts. The side is stiffened and braced by the well-known Kirby bracing or double paneling. Between the rail and the truss-plank a one-inch whitewood panel is fitted, which is also halved on to the posts and carefully secured. After being scratch-planed, the outside panels are glued directly on to the foundation thus formed. The value of this method of construction can best be understood by those who have had occasion to strip a car finished in this way. In a particular instance, which occurred at the New Haven shops of the New York, New Haven & Hartford road, the panels in stripping were taken off in chips, very few of which were larger than a man's hand.

The interior is not unlike that of other cars of this class. The dining-saloon has twelve tables, and there is the usual long kitchen. The arrangement of the windows is made very effective by placing large mirrors between each pair, opposite the tables. The inside finish, it will be noted, is very flat and presents as few projections as possible for the dust to settle on. The Wason Co. have, as far as possible, in all their designs, adhered to this principle of making the interior finish of the car with but few projections, and their success in this demonstrates that, aside from the utility of the principle, it is a correct one from other standpoints. In a dining-car, especially, there should be nothing on which dust can lodge which cannot be quickly and easily reached with a brush and thoroughly cleaned. The smooth and continuous mahogany head-lining, with its flat moldings, is in this respect a great advantage over the ordinary raised deck, with its numerous moldings and window ledges.

The exterior of the car is very simple; the windows being in pairs separated by 24-inch panels. The arrangement is shown in Fig. 4, also the style of lettering upon the letter board. The lights of glass are of moderate size, but a large window is obtained by dividing the sash. A 21-inch rise is easily obtainable in this way.

The system of heating and ventilation is the same as that used on the Mann cars. In winter, the air is heated and passed through a filtering chamber in such a way as to deliver it in the dining-room warmed and free from dust. In summer, the chamber is provided with a supply of ice so that the air is cooled and has the dust removed from it at the same time. With a proper ice supply, a comfortable temperature can be maintained in the dining-room while the thermometer outside stands at from 85 to 90 degrees in the shade. Although the car is nearly 9 feet in the clear in the center, and keeps this width well out toward the sides, it is less than 14 feet high from the top of the rail over all projections.

Communications.

The Taper Fit.

To the Editor of the National Car-Builder:

I notice in the February number of the CAR-BUILDER an article taken from the *Scientific American*, advocating the taper fit. Now, there are places where a taper fit is desirable, if a perfect fit could be assured, but if not perfect, it is worse than none. For a running fit it does not appear to be good in many cases. I have seen milling machines with spindles fitted taper in the boxes, but these had adjustable collars at each end of the bearings. In most cases, if fitted close, the taper would cause trouble by wedging and cutting. In locomotive work, the taper can be used to advantage in many places, such as strap-bolts for rods, bolts in guides, links, etc. In other places where it is desirable to get rid of heads of bolts, they could be let in flush with the surface, saving time and trouble in wiping, also getting rid of the dirt and oil which accumulates and looks so bad where cleanliness is desirable.

The taper is also much used in fitting crank-pins, and in some places in fitting driving-wheel tires and wheels on axles. As to making taper fits, it is a well-known fact that very few holes of any length and perfectly straight, are made with a lathe, that is, where the work is held in a chuck or on a face-plate. If a reamer is used, in almost every case the pole will be found largest on the front side, as can easily be seen by trying an arbor at both ends. If the hole is turned out with a tool held in the rest, it will be found that most lathes are more or less imperfect in cutting straight. Where both centres are used, it can, of course, be made to cut straight by moving the tail centre. In making a taper hole, if a reamer is used, it must have some kind of a stop if more than one hole is to be made; the same if a hand-reamer is used, it is likely to chatter, in which case the hole will not be round. In turning out a taper hole held in a chuck or on a face-plate, the imperfections of the lathe must be taken into consideration, provided a certain taper per inch is to be used.

To perfectly fit a stud or shaft to a taper hole requires patience and care, especially where the work is large and heavy, so that it is not handy to try the fit half a dozen times, perhaps. Now, of the common run of machinists employed in shops to-day, and in railroad shops more than others—for railroad shops, as a general thing, don't employ the very best class of machinists, because they will not pay for them—probably not more than one-third of them know the rule for setting a lathe to cut a given taper, but must cut and try till they get something they think will pass. If the hole is made with a reamer, and the reamer is not marked, find what the taper p r inch is, which is easily found by sizing the reamer in two places one inch apart. The difference is the taper per inch. Take the piece to be turned taper, get the length, multiply the length of it in inches by half the required taper per inch. The result is the distance to set the tail spindle of the lathe to one side. Thus, I have a piece six inches in length to be turned $\frac{1}{16}$ per inch taper. Required the distance to set the tail stock over: $6 \times \frac{1}{16} = \frac{6}{16} = \frac{3}{16}$. Tail stock is to be set over $\frac{3}{16}$ of an inch. Sometimes it is handier, on account of fractions, to multiply half the length of the piece to be turned by the taper per inch, the result being the same. If more than one piece is to be turned the same, they must be of the same length, for the lathe must be set differently for longer or shorter pieces. If pains are taken to see that the lathe is set straight to begin with, this rule will be found to be correct in all cases.

SHAWMUT.

How to Lessen the Cost of Transportation.

To the Editor of the National Car Builder:

The cost of carrying a passenger or a ton of freight a given distance is a matter that concerns railway companies more than anything else, except perhaps the manipulation of stocks; and the actual value of stocks can only be determined by an accurate knowledge of the details of transportation. The average cost of moving a ton of freight one mile can be estimated with approximate correctness, also the cost of hauling a train of a given weight and at a certain rate of speed over roads upon which the grades and curvatures are known, the estimates being based upon the several items of ordinary expenditure—fuel, oil, waste, wages and salaries, interest, taxes, wear and tear of permanent way, rolling stock, etc. In addition to this, however, is the cost of accidents of various kinds which are liable to occur, and constantly do occur, in spite of ordinary care and vigilance. The damage resulting, increases by so much the cost of transportation, whether in the form of judgments awarded for personal injuries, or the destruction of station houses, rolling stock or other property by fire. This class of expenditure amounts to an enormous sum in the aggregate. Railway companies in Illinois are required by law to pay $5,000 to the representatives of a person killed upon trains or tracks, otherwise than by their own negligence, and such further sums in addition as the courts may award in issues brought before them. One of the great trunk lines recently paid $20,000 on account of injuries sustained by an employé in coupling cars, by which he was made a cripple for life.

Instances like these are cited to show how advantageous

it would be to the roads in the way of lessening the cost of transportation, if the amounts thus expended, or a very moderate percentage of them, were applied in equipping their rolling stock with good brakes and coupling devices, and the tracks with safety switches and the most approved signaling apparatus. When a railway official is asked to pay a few thousand dollars for a new and improved device, he thinks it is a larger sum than the earnings of the road will warrant. He will argue that he has had no accidents from misplaced switches for a year or more, and that it would be a waste of money to put in safety switches. Train collisions are far more frequent than they need be, when the advantages of the block system are so well known, and a great number of bridges that would safely carry the traffic of a few years ago, are in need of thorough repairs, or should be rebuilt in order to stand the increased speed and weight of trains and engines. The poverty of some roads that are on the verge of bankruptcy or in the hands of receivers, can be traced to the false economy of neglecting to provide safety appliances and keeping worn-out equipment too long in service. The best-managed and most successful roads in the country have always made it a point to secure the most approved appliances of this kind, and to regard the cost of them as a profitable investment.

The traveling public and the managers of two of the trunk lines are now much interested in shortening the time of transit between New York and Chicago to 18 hours. If this can be accomplished, it will lead to efforts of a similar kind on other important lines—that is, the faster running of fast through trains. That the distance between these cities can be made in the time named seems quite practicable, provided the requisite preparation is made, by putting permanent way and rolling stock in first-class condition. Bridges will need careful examination, safety switches must be used, rails will have to be more securely fastened to prevent spreading under the tremendous lateral thrusts of the heavy locomotives that will be required for the service. The danger at grade crossings will be augmented, and render necessary the most effective precautions in the way of brake appliances and signals. The extra cost of preparation in placing track and equipment in the very best condition, will of itself be an outlay that will be productive of good results, even if no actual profit is realized from the receipts of the running.

WM. S. HUNTINGTON.

Master Car-Builders' Reports.

To the Editor of the National Car-Builder:

A subject which ought to be worthy of the consideration of master car-builders is the exchange of reports, similar to those in use among the master mechanics, dividing all the expenses of the car department on the basis of "per car per 1,000 miles run," thus affording an opportunity for comparisons between different roads doing about the same amount of business, as to the amount of oil, waste, brass and other material used, also cost of repairs, inspection, etc.

On all roads where a passenger car wheel record is kept, there is no difficulty in arriving at an accurate mileage of the passenger equipment, and, consequently, at an average of the expenses for repairs. This is also the case with foreign freight cars, as the mileage is always kept separate from that of the cars owned by the company.

Now, the question arises, How shall we arrive at an average mileage of our freight cars? As it is next to an impossibility to get an accurate mileage of our cars on foreign roads, we can establish a comparative mileage which will answer every purpose, by taking the total mileage of our cars as reported on the road during the month, and dividing it by the total number of cars owned by the company.

Now, as we must divide the total expense of the department among all the cars, so that each car shall bear its share, it is immaterial whether that car is on a foreign road, on a side track of our own road, or in the shop undergoing repairs. In either case no mileage would have been reported, while the expense of repairs would be equally divided among the whole number of cars. This is on the supposition that the expense to our department ceases when a car leaves the road, except such bills as we receive from foreign roads for wheels, etc., which are charged up against total expenses and divided pro rata.

The only objection to this average is, that roads doing a large local business, and running their cars principally over their own roads, would show a lesser mileage per car than other roads doing a large foreign business.

All companies having an established business must run about the same proportionate number of their cars over their road every month, a decrease of business leaving more cars on side tracks and less on foreign roads, consequently making but little variation in our comparative average except such as is caused by an increase or decrease of business on the road.

As this seems to be a subject to which little attention has been given, I should be pleased to hear from some of our fellow workmen on the subject.

CAR-BUILDER.

THE Tampa City Street Railway Co. has been organized at Tampa, Fla., for the purpose of constructing a street railway at that place.

Glue or White Lead for Joints in Car Work.

To the Editor of the National Car-Builder:

There seems to be considerable difference of opinion in regard to the use of glue or white lead in putting framing together. There are several shops where the use of glue has been abandoned, and all joints are now made with white lead, the claim being that a lead joint can be made more solid than the common glue joint. In using glue there is a constant tendency to work with the glue-pot too cold. This weakens the glue, and it is held that cold glue is not worth putting on. The question I wish to ask is, whether a good, stiff white lead will make a good joint, and how long it takes to harden.

C.

[We shall be glad to hear from our readers in reference to this subject, which, as our correspondent says, is attracting some attention. Glue poorly applied in the framework of cars is certainly of very little use. White lead makes a firm joint, but the time required for it to set thoroughly seems not to have been determined.—ED. CAR-BUILDER.]

The Stevens Locomotive Boiler.

To the Editor of the National Car-Builder:

I notice an article in your February number, written by J. Snowden Bell, of Pittsburgh, in regard to a locomotive boiler recently constructed at our shops in this city. He says there is nothing new in the design of the boiler. I do not claim, and never have claimed, that there is anything new in the design of the boiler, excepting the large tubes leading from the furnace to the combustion chamber. If that is not new, then there is nothing new about it. I am inclined to think that the success of the boiler is due wholly to these large tubes and large grate area. In 1874 I built a boiler with center combustion chamber, but the tubes leading to and from the same were 2 inches in diameter. The boiler did not work well, however. The object in putting large tubes in is to permit the gases to burn from the furnace until leaving the combustion chamber. I think if the tubes were 2-inch that the flame would be extinguished immediately upon entering them.

A. J. STEVENS,
Gen. M. M. Cent. Pacific R. R.

SACRAMENTO, CAL., FEB. 10, 1885.

[The Stevens boiler, illustrated in our January issue, is fitted with 4-inch tubes from the furnace to the combustion chamber, and from the combustion chamber to the smoke arch, with 1½-inch tubes.—ED. CAR-BUILDER.]

A Rotary Steam Snow Shovel.

The CAR-BUILDER for October, 1884, contained an illustrated description of a new snow plow, or more properly a rotary steam snow shovel, designed for removing heavy drifts or masses of snow from railway tracks. The machine is in course of construction at the Cooke Locomotive Works, at Paterson, N. J., for the Rotary Steam Snow Shovel Mfg. Co., of the same place. It was expected to be in readiness for service during the past winter, but the completion of it has been delayed for the purpose of making a very important improvement in its construction. The work upon it was sufficiently advanced ten days ago to warrant its completion by the first of March, when it would be sent to Chicago to aid in raising snow blockades on western roads in case of need.

As originally designed, the machine was intended to deliver the snow upon one side of the track only. This, in mountainous regions or upon prairies where winds blow from one direction, would be impracticable, or nearly so. Only in a broken or undulating country would it be possible to dispose of the snow always upon the same side of the machine.

The improvement consists in making the action of both cutters and shovels reversible, and altering the position of the delivery openings while in operation, and at a moment's notice, so as to throw the snow upon either side of the track as circumstances may require. The improvement is the invention of Mr. Edw. Leslie, the superintendent of the company.

Doing Away with the Bell-Cord.

The bell-cord system of signaling is becoming obsolete on the Pennsylvania Railroad, and a new and more effective method is being adopted in its place. It is called the air-tube system, and is described as follows:

"Each car has a rubber tube running under the bottom, and these are connected between the cars in the same way as the Westinghouse air-brake tubes. They are kept charged with air at 15 pounds pressure from a reservoir under the cab of the engine, and which is itself supplied from the air-brake reservoir. The rubber tube is also connected with a whistle-valve in the cab. The conductor, by pulling a cord in the car, opens a valve in the rubber tube, and allows the air to escape. This relieves the pressure on the whistle-valve, and throws it open, causing the whistle to sound. So long as the cord is held the whistle will sound. One whistle means the train is broken. The same effect would be caused if the rubber tube was broken, and the engineer would thus be informed at once of the accident."

Improving the Steam Distribution of Locomotives.

In looking over some very handsome indicator cards not long since, the question was raised among a party of engineers, as to whether such cards could be very much improved even from a theoretical point of view. Doubts were expressed by some, while others thought there would be no appreciable gain, even if the acknowledged defects of the locomotive cards were remedied and made to suit the most fastidious engineer. The question is one which has often been brought up without having been very carefully considered, and as few if any attempts have been made to analyze the cards and obtain figures, it may be well to do so. In this way it will become evident whether there are any reasons for attempting to make any changes in the steam distribution.

In the December number of the CAR-BUILDER, Mr. Frank C. Smith presented a pair of very handsome and very nearly perfect cards, taken from an engine going at the rate of 57 miles per hour. These are reproduced in Fig. 1.

The admission line is as good as is usually seen in diagrams taken at as high a rate of speed, while the back pressure is very low. The early closure of the exhaust, though it diminishes the size of the cylinder in effect, is favorable to economy and largely reduces the initial condensation. The highest pressure is about 120 pounds, which is as good as can be got with a link-motion under the conditions. In short, the cards seem to be about as good as they can be.

In order to present clearly to the eye what is taking place in the cylinder during each stroke, it is necessary to put the diagram into a little different shape from that in which we are accustomed to see it. To do this, the back pressure line of one card is combined with the steam line of the other. At the same time, the two cards are separated from each other, as in Figs. 2 and 3 (B and A). The point where the lines cross is that at which the forward impulse of the steam is neutralized, and a positive retardation of the motion of the piston begins. The steam pressure is very irregular, the stroke beginning with 120 pounds, but losing it all at about 20 inches, and ending with very nearly the full initial pressure against it. Although the exhaust closes a little before half stroke, the actual and positive retarding effect, or cushion, does not begin, as many suppose, till much later in the stroke. This is inevitable, and seems to do no harm. Even the late compression of some of the high-speed stationary engines appears to be advantageous, although terminating at boiler pressure.

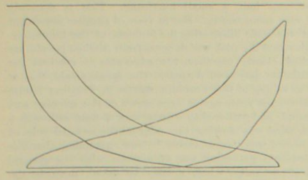
Measuring up the cards, it appears that the back pressure of card A is 22 percent of the steam area, and in card B it is between 18.7 and 19 percent.

Using parts of the steam and exhaust lines of Fig. 1, the two cards C and D, Fig. 3, have been constructed, but the port opening is supposed to be large enough to give boiler pressure till the cut-off closes, and the closure of the exhaust is delayed till within a short distance of the end of the stroke. By a reduction of waste room, the cushion is supposed to reach the same pressure as before at the end of the stroke. This, of course, is very nearly the theoretical card. The horizontal shading shows the effect of back pressure and compression. These simple changes do not appear to the eye to have made any considerable difference in the size of the card, yet they actually increase the area of card C 42 percent over that of card A, while card D is 34 percent large than card B. In plain terms, then, these changes mean that the power of the 16-inch cylinder would be increased at the 5-inch cut-off by rather more than 38 percent. These figures are somewhat surprising, but they are easily verified by measuring up any pair of locomotive cards taken at a short point of cut-off when going fast, and then making similar corrections to those shown here.

If these changes could be actually made, and the valve gear made to give this distribution of steam, and the waste room be so reduced as to allow boiler pressure to be reached with the late exhaust closure, this large increase would be obtained without making any increased demand on the boiler for steam. The economy of the engine would remain the same, but the effect would be equivalent to a large increase in the size of the cylinder, by making the steam more effective. Such a saving appears to be worth consideration, at least, since an increase of 38 percent in the power of a fast engine would be well worth having.

Carrying the improvement still further, suppose the pressure in the boiler be raised to 160 pounds, and the cut-off be shortened till the expansion line corresponds to that of card B, Fig. 2. This would give a card like that in Fig. 4. Here the eye does not find a very large difference in the size or area, but it actually amounts to 43 percent, the card in Fig. 4 being that much larger than B, Fig. 2.

In Fig. 5, a pair of diagrams are shown which were taken from an engine recently built to carry 160 pounds boiler pressure. These cards show quite as good a steam distribution as those first mentioned, with the advantage of a higher initial pressure. The speed was slower, being but 228 revolutions per minute. The cut-off took place, as nearly as possible, at ¼ of the stroke. Could this engine be made to give cards like those indicated by the dotted lines, the gain would be very great. In drawing in these dotted lines no attempt has been made to make a strictly theoretical card. The compression line is the same as that



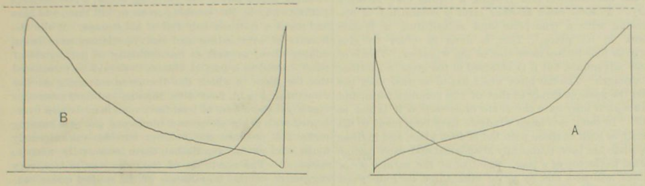
Boiler pressure line, 134 lbs.; Cut off at 5″; Revolutions, 270.

Fig. 1.

which the engine makes when the lever is in the fourth notch, and the admission line has been kept up to the initial pressure till the cut-off takes place. In Figs. 6 and 7 these cards are reduced to the same form as those in Figs. 1, 2 and 3.

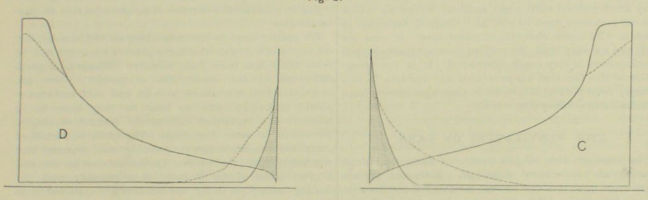
Measuring up these cards, the back-pressure area is found in Fig. 6 to be more than 33 percent of the steam side, the area of which in the original cards being 912 against a back pressure of 334. The net area of the card is but 67 percent of the apparent size. In the card from the other end, Fig. 7, the back pressure becomes no less than 57 percent of the effective pressure.

Improving these cards, as shown by the dotted lines, by keeping the admission lines up to boiler pressure till the closure of the valve, and delaying the exhaust closure, increases the area of the original card to the extent of 77



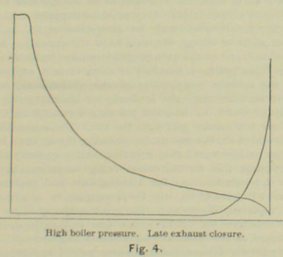
Steam and back line of cards in Fig. 1 combined.

Fig. 2.



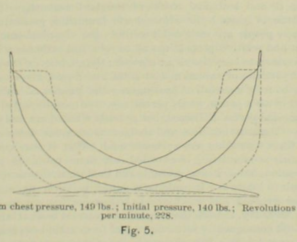
Steam and compression lines of Fig. 1. Higher initial pressure and delayed exhaust closure.

Fig. 3.



High boiler pressure. Late exhaust closure.

Fig. 4.



Steam chest pressure, 149 lbs.; Initial pressure, 140 lbs.; Revolutions per minute, 228.

Fig. 5.

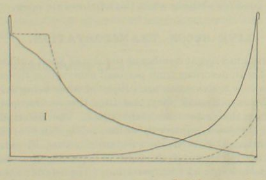
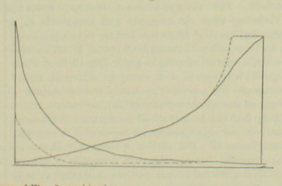
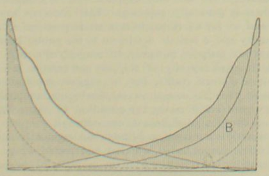


Fig. 6.



Dotted steam and exhaust lines of Fig. 5 combined.

Fig. 7.



Boiler pressure, 155 lbs.; Steam chest pressure, 149 lbs.; Revolutions per minute, 208; Initial pressure, 140 lbs.

Fig. 8.

percent in one case and 74 in the other. More than half of this reduction comes from reduction in the back pressure, or more properly the compression. The gain for both ends of the cylinder is, as nearly as may be, 75 percent.

The cards shown in Fig. 8 are still worse. The piston accomplishes very nearly half of its stroke against a pressure which begins about the middle, and actually passes the center against a pressure of a little more than 170 pounds per square inch, while the steam-chest pressure is only 155 pounds. Here the compression side of the card amounts to 60 percent of the steam side. By delaying the closure of the exhaust to the point where it would take place with the reverse lever in the last notch, the net area of the card and the power of the engine would be increased a very small fraction less than 84 percent. In actual service such short points of cut-off are practically useless, not, indeed, from a lack of economy, but because the power is reduced to a point where it becomes insignificant. From an economical point, the shorter cut-offs are very desirable, but they entail methods of working which are by no means to be commended. The conversion of the cylinder into a compressor during the last half of the stroke, in which the steam pressure is exceeded by from 10 to 20 pounds, is not mechanically a very satisfactory feature, the engine absorbing in the last half of the stroke about 55 percent of the power generated during the first half.

It must not be supposed that in making an analysis of these cards the object has been to show the wastefulness of the locomotive, but quite the contrary. Mr. Barrus, in his report on the Boston & Albany engines, shows that in spite of a very low evaporative duty, as compared with stationary practice, the engines were producing a horsepower for about 19.6 pounds of water as computed from the cards. The measured consumption, which included all the waste from the injectors leakage, etc., was only 25.6 pounds and in one case 24.51. The object is to give some figures in regard to points which have had little or no attention, because, judged by the eye, they seemed too small to be worth thinking about. Few engineers in looking over a set of cards, would dream that such small changes of outline as those indicated in the diagrams would produce such remarkable alterations in area. The figures are given as suggestive material, and the practical man in looking them over can best judge whether there are any advantages which may be gained without too great a cost in either complication or money.

Mileage of Allen Paper Car Wheels.

The Allen Paper Car Wheel Co. has published in pamphlet form two detailed statements of mileage made by its wheels under 45 cars running on the lines of the Pennsylvania Railroad, the data upon which the statements are based being furnished by the Pullman Palace Car Co.

The first statement covers the mileage of 306 wheels that were applied upon 25 cars, the numbers of both wheels and cars being specified. It appears that 8 of these wheels have averaged 521,317 miles, and that 74 have averaged 444,454 miles, and that but six of the tires on these have been expended, all the others being fit for service. Out of the 306 wheels, but 35 have been expended and require to be retired, and these have given an average service of 342,964 miles each; the remainder, or 271 wheels, are still in service, or held in stock ready for service, and have already made, in connection with the 35 (the tires of which have been expended), an average mileage of 330,577 miles. As it is but fair to presume that the poorest tires have been worn out first, the mileage of the remaining 271 wheels should far exceed that of the 35 before named.

Another lot of 288 wheels, as shown in the second statement, was put in service under 20 cars at a later date, and on the same road. Only 14 of the tires upon these have been expended, and this in a service of 247,544 miles. As the company guarantees a minium service of 260,000 miles, these wheels receive a credit for the difference between the 247,544 miles made and the 260,000 guaranteed. 274 of these wheels are in service, 70 of which have been temporarily removed for a first turning after an average service of 166,113 miles.

This is certainly an excellent record for these wheels to make upon lines with heavy grades and fast-running trains.

A Merited Tribute.

At a meeting of Master Car-Builders, held at the Tifft House, in Buffalo, Jan. 14, the following preamble and resolution were presented by Messrs. R. H. Soule, Robert Miller and F. M. Wilder, a committee appointed for that purpose, and were unanimously passed:

Whereas, Mr. Leander Garey, the well-known Master Car-Builder of the New York Central & Hudson River Railroad, has withdrawn from active service in his profession:

Resolved, That we wish to record our recognition of his services in that connection, and our appreciation of the earnestness and enthusiasm which he has always evinced in our mutual efforts to reach the results arrived at by the master car-builders of the country, in the matter of better and more uniform conduct of the business of that branch of railway service, with which he has so long been permanently identified.

Furthermore, that we wish to express our regret for the loss of his companionship and participation in our meetings, although we realize that the respite from active duty which he now contemplates is well won and well deserved. We indulge in the hope that he may soon return to duty, and resume again among us his former active influence.

THE cable system for running street cars is said to be a complete success in Philadelphia. The cable, as it runs on the pulleys in the tunnel beneath the street, makes a buzzing kind of noise which can only be heard on the street when every thing else is quiet. The grips work well, and also the brakes. When the Sansom Street station, now in course of erection on Sansom street, below Ninth, is completed, its cable will carry the cars at this point as far south as McKean Street, and the station at Twentieth and Markets Streets will complete the system and furnish sufficient power to run all the passenger cars of the Traction Company's lines, and many more if necessary. All of these branches will probably be completed by April 1. The only matter now in the way of the immediate regular running of the cars on the completed section is the want of sufficient drilled brakemen.

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EDITORIAL ANNOUNCEMENTS.

Addresses.—*Business letters should be addressed, and drafts and money orders made payable, to* THE NATIONAL CAR-BUILDER. *Communications for the attention of the Editor should be addressed* EDITOR NATIONAL CAR-BUILDER.

Advertisements.—*Nothing will be inserted in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *The editorial department will contain our own views and opinions; and the rest of the reading matter, aside from advertisements, will be such as we consider of interest to our readers.*

Contributions.—*Articles relating to railway rolling stock, construction and management, and kindred topics, by those who are practically acquainted with these subjects, are especially desired. Also early notices of changes in railroad officers, organizations and names of companies.*

Special Notice.—*As the* CAR-BUILDER *is printed and ready for mailing on the last day of the month, advertisements, correspondence, etc., intended for insertion, must be received nor later than the 25th day of each month.*

SUBSCRIPTIONS *to the* CAR-BUILDER *will be received, and opies kept for sale, at the following places:*

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BAY-WINDOWS IN PASSENGER CARS.

The novelty of bay-windows in passenger cars will doubtless win a temporary popularity, but unless some improvement can be made in the method of framing to give the cars greater strength, or a strength equal at least to that of cars of the ordinary style, their popularity is not likely to be very enduring. The bay-windows, so called, instead of projecting outwardly, are inverted, or let into the car, and are formed by bringing one of the posts which separate two of the large windows inside the general line of posts so that the two sashes form a re-entrant angle. In order to get a better outlook from within, this angle must be considerable, and this brings the post some distance inside the line of both the plate and truss-plank. If truss-plank is used, the bottom of the post has to be [illegible] like the top, by blocking, and in some cases, in order to make the floor finish a little more regular, the post is not allowed to come all the way down, but is stopped as soon as the window finish is passed. This is, in effect, a crooked post and at the same time a very heavy one, for the windows being large, a good body of wood is needed in it. At the top the letter-board has to hold it in place by the aid of glue-blocks and a couple of bolts or lag screws. A packing-piece is needed behind the post to fill up the space. Different builders have different ways of making the connections, but whatever plan is used there are grave objections to such a broken style of framing, which cannot be obviated by adding more timber or increasing the number of bolts. This form of framing is especially weak above the window-rail. The weakest point of the ordinary car frame is between the plate and the window-rail, and but little can be done to strengthen it. The best construction hardly gives as much support to the window posts as could be desired. The common practice of putting a single post between each pair of windows forms a still more flimsy structure, the weakness of which is likely to cause a great loss of life in case of accident. In the new bay-window cars this weakness exists in an aggravated form. The windows are very large, and between them is placed a post which has not only no strength of its own, but has to be supported by the plate letter-board and belt-rail. This practically severs the connection between the belt-rail and the plate for a distance of from four to six feet, according to the size of the windows. The larger the windows the greater will be the weakness. Extra wide panels between the windows will do something toward making up for this loss of strength, but it will not give the weakest part of the frame all the resisting power that is needed. If this form of construction is to be generally adopted it will be necessary to devise some better way of framing. In case of an accident a sharp lawyer would have no difficulty in picking flaws in the construction and making a strong case before a jury. In some cases another error is committed in dispensing with a true plate and substituting a 1½-inch plank in its place. This is done in order to give three or four inches more rise to the windows. This is of some advantage, but it is obtained at too great a sacrifice of strength. The flat plate which has to be used does not hold the posts as firmly as that of the common form, and although it may have the same cross-section it is not as stiff. In some cars large windows have been made to lift nearly as high as those with but 30-inch glass, and in these the plate has been practically abandoned and each carline bolted to the top of a post. The foot of the carline is, of course, widened out so as to take three or four wood screws or bolts.

The defects we have pointed out will not probably be very much noticed until some accident occurs by which the car is thrown upon its side and dragged violently in contact with some obstacle, or rolled over. If cars are well and strongly built, the peril to their occupants in such contingencies is very much diminished. It is the recognition of this fact that has prevented car builders in this country from putting side-doors in passenger cars—a form of construction inherently weak.

THE VENTILATION OF CARS.

Ten years ago this subject received a great deal of attention at car-builders' meetings. Elaborate reports were made upon it at the annual meetings of the Association in 1874, '75 and '76. These reports, and the discussions to which they gave rise, were very exhaustive. The hygienic conditions existing in passenger cars were analyzed with great thoroughness, aided by professional experts and technical works of standard authority—the nature of gases; the atmospheric impurities generated where people are crowded together; the chemical affinities and relative proportions of oxygen and carbonic acid necessary to keep the air salubrious; the quantity of worn-out particles of animal matter solid and liquid, given off per hour by a carfull of passengers; the number of cubic feet of air a person needs per minute; the morbific exhalations and germs of disease that pervade vitiated air, and so on. The most insidious and dangerous element detected in these researches was carbonic acid. That it was constantly accumulating in crowded cars there could be no question, but as it was invisible and inodorous, it was difficult to locate it. It could be weighed, however and had been weighed, and was found to be heavier than common air, so heavy, indeed, that it could be carried in a hat, and would consequently settle down and form a kind of strata along the floor. This theory, however, was soon upset by another, claiming that the noxious gas, inasmuch as it came warm and rarefied from the lungs, went up instead of down, and was diffused through the car. In either case it was deadly, a carfull of people, according to Prof. Huxley, giving off two pounds of it every 20 minutes, and of this it was unsafe for a greater quantity than one-sixth of one per cent. of the whole volume of air, to remain in the car. To keep it down to this small percentage, 2,000 cubic feet of fresh air per minute must be supplied to a car with sixty passengers in it. But as this quantity is obviously too great to handle, practically, it is generally conceded, we believe, that 1,000 cubic feet will do, although it may not insure perfect salubrity.

This subject of car ventilation was discussed at the January meeting of the Master Car-Builders' Club, a report of which we printed in our last issue. The discussion developed nothing new in theory or in improved methods and devices. A few inventors were present and stated their views, and there was the usual scattering talk about how to do it and how not to do it, until the subject became tiresome and was dropped. The greatest divergency in opinion was in reference to the quantity of fresh air to be forced into a car to constitute good ventilation, the maximum and minimum extremes being so great as to indicate that nothing very definite or reliable was known about it. One of the speakers in trying to reconcile these divergencies, said that under moist and warm conditions, a carfull of passengers moving at 20 miles an hour, even with both ends of the car knocked out, would not be fully ventilated, for the reason that the inflowing current of fresh air would not be sufficient to carry off all the impurities emanating from the lungs and skins of the occupants. Nothing, in fact, would do it but a small hurricane. In a dry climate, however, and in warm weather, half as much fresh air would probably be sufficient—say half a small hurricane. This is certainly not very encouraging. But in view of another statement that was made illustrating the foulness of the human organism and the reek which oozes from it when people are packed closely together, the advocates of efficient car ventilation may well despair. The speaker said, that at the unvailing of the Franklin statue in Printing House Square some years ago, a large crowd of the average sort of people had gathered to witness it, and that although a brisk wind was blowing, the odor on the leeward side of the crowd was "insufferable." Now, assuming that this malodorous gathering was of a piece with the general run of humanity, what, it may be asked, must be the hygienic condition of things in a sleeping-car on a winter night, with both ends of it firmly in place instead of being knocked out, a sleeper in every berth, the porter busy cleaning boots, soiled towels lying about, a few smokers puffing away in the smoking-room to kill time, and here and there a spittoon half full of old stumps. While the horrors of overheating and bad ventilation were being dilated upon, as well as the difficulty of getting rid of them, except to a partial extent, it should be mentioned that the room in which the discussion was going on was something less in floor area than an ordinary passenger coach, yet there were at least forty men in it. It was overheated with a big stove and numerous gas jets burning under full pressure, the weather outside was extremely moist, and as for ventilation, there was really none to speak of. The condition of the room was, in fact, very suggestive of the importance of the subject under consideration, although its occupants did not appear to be aware of the mephitic impurities they were inhaling while trying to alleviate the miseries of people who ride in passenger cars.

We readily concede that something should be done, but we very much doubt whether a great deal more can be done than has been done already. There is a great difference in the sensibilities of people. Some are twice as sensitive as others to heat and cold and atmospheric impurities, and so long as they have to be warmed and ventilated collectively instead of singly, there will be some discontent. The truth is, that 99 of every 100 passenger cars are passably well warmed and ventilated with the various appliances now in use, and a great many of the 99 more than passably well. In dealing with these things car-builders are expected to do what they can to make people comfortable while they are in the cars, without subjecting them too rigidly to the requirements of scientific formulas as to the number of cubic feet of air per minute they must be supplied with. The scientific theories may be altogether right, but whether right or wrong, the comfort of the passenger is the final test, and he can only gauge his comfort by his own feelings. Not one in a hundred of them cares a copper about the specific components of the atmosphere, or whether carbonic acid gas is deadly or nutritious, or goes up or down, or whether ten or a thousand cubic feet of air per minute gets into the car. The essentials to be provided are the means for warming the air that is admitted, and for exhausting a corresponding quantity at the same time, this air movement being continuous but subject to regulation. As for keeping dust and cinders out, that will have to be left to passengers to a great extent, especially in summer. The great majority of people prefer to have the windows open and endure the dust and cinders, rather than have them closed and be smothered in pure air filtered through some patent apparatus that is good for nothing when the windows are open.

LIVE STOCK TRANSPORTATION.

A writer in a recent number of the *Age of Steel*, published in St. Louis, describes from personal observation the cruel treatment to which cattle are subjected while being driven from Texas to Kansas City, and from thence transported by rail to the eastern seaboard cities. The description, although written apparently in the refrigerator car beef traffic interest, is no doubt substantially true, if, indeed, it does not fall short of the truth in depicting the abuses practiced in live stock transportation. The details need not be recapitulated. It is enough to say that they are revolting to every humane instinct and a reproach to civilization. It is not alone the barbarities inflicted upon helpless animals to satiate mercenary greed that should attract public attention, but the diseased and unwholesome meats with which our markets are in this way supplied, and to a larger extent than is generally supposed. This concerns everybody, and so far as it exists it is an imposition on the community and a serious detriment to the public health. It is not our purpose, however, to magnify the evils resulting from the rapacity of shippers and carriers in conducting live stock traffic, but to suggest some of the reasons why so little, comparatively, has been accomplished in the way of ameliorating the condition of cattle while in transit over long distances on our railways.

The trouble is not because suitable cars cannot be built, or that cattle cannot be fed, watered and rested while on their journey; but it results from the necessity of cheapening the cost of transportation by carrying as many cattle as possible in a car, and by continuous running, so as to make the trip in the quickest possible time. This will do very well for short distances that can be made in from 12 to 18 hours, but when cattle are driven long distances to

points of shipment, and are then packed into cars to remain there from 50 to 100 hours, with imperfect feeding and no outside rest, the case is very different. If cars could be made so as to give the animals plenty of room to lie down and at the same time be supplied with feed and water, without increasing the cost of carrying them, it would have been done long ago. "Palace" cattle cars were invented and patented a dozen years ago, with ample provision for making the cattle comfortable and saving them from the protracted misery which they now have to endure. One of these cars was 36 feet long and 9½ wide, which is 10 feet longer and 1 foot wider than stock cars usually are. It would carry 16 cattle of ordinary size and give them plenty of room, but no such cars are running on the roads now, because competition will not admit of it. No road is going to carry cattle in palace cars, packed in as loosely as hyenas and tigers in a traveling menagerie, while a rival road, by prodding and tail-twisting, carries twice as many in the same number of cars of the common kind. The best car, from a shipper's and transporter's point of view, is one that will carry the greatest weight of Texas steers to the square foot without killing the steers before reaching their destination.

The fiasco of the American Humane Association four years ago will doubtless be remembered by inventors and people interested in live stock transportation. This amiable and well meaning organization, apparently out of pure solicitude for the comfort of cattle in transit over railways, offered a prize of $5,000 for a stock car that would meet certain specified requirements. It must be suitable for carrying neat cattle, horses, sheep and hogs, must give them ample room and have facilities for feeding and watering, without any increase in cost of transportation. It must also be adapted for carrying merchandise, but its cost must not exceed that of ordinary stock cars. These were pretty hard conditions in view of the indifferent success of prev ous inventions in this line, and it is not a matter of wonder that of the 700 designs and models submitted, not one was found to be entitled to the prize, and the result would probably have been the same had the prize been ten times as large as it was, with the patent thrown in. Some of the disappointed competitors, indeed, were so uncharitable as to insinuate that the whole performance on the part of the Humane Association was a speculating device to get control of the patent of a first rate stock car. The association doubtless assumed without sufficient knowledge that a car could be designed to meet certain requirements which were more than inventive ingenuity was equal to, and that it would be forthcoming when a sufficient money inducement was offered.

The truth is, that plenty of cars for carrying cattle in a humane and expeditious way have already been built. The prize designs referred to were many of them so good that the judges were unable to decide which was best, and so withheld the prize on the pretext that none of them came up to the mark. It is doubtful whether shippers and carriers want any better cars to lessen the miseries of the cattle, unless they will carry more cattle in less space than cars now do, and thus increase the profits of the business. In railway traffic the tendency is to carry more paying weight of all kinds of freight, and live stock is no exception. What is needed to put a stop to the cruelties incident to the transportation of cattle and the slaughtering of sick animals for food that are fit only for fertilizing purposes, is the enforcement of the existing law of Congress, with such additional provisions as may be required; or, in other words, the management and running of cattle trains should be subjected to more strict legal supervision than they now are.

PASSENGER TRAFFIC IN NEW YORK CITY.

The whole number of passengers carried on the elevated and surface railways, and in omnibuses, in the city of New York in 1884, amounted to the enormous aggregate of 302,183,362. Of these, the surface lines carried 187,413,242, the Manhattan Elevated lines 96,702,620, and the omnibuses 18,067,500. With the exception of the old elevated structure in Gre nwich street, built and operated in an experimental way for some years previously, the elevated roads proper, now constituting the consolidated lines of the Manhattan Co., went into operation in 1878, and formed what was then supposed to be a system of rapid transit between the Battery and Harlem River, sufficient for the growth of the population for an indefinite period, and seriously impairing at the same time the business of the horse-car lines running parallel with the rapid transit structures.

How far these anticipations have failed of being realized, will appear from the fact that the whole number of passengers carried on the surface and elevated lines in 1884, not including omnibuses, was 120,179,574 greater than were carried on the street lines in 1877, the year before the completion of the rapid transit lines. It will be observed that during these seven years the growth of traffic exceeds by 23,476,944 the number of passengers carried by all the elevated roads in 1884, and that the number carried on all the horse-car lines in 1884, was 90,710,622 greater than the number carried on all the elevated lines in the same year.

Th causes which have led to this marvelous increase are sufficiently obvious and need not be dwelt upon. It is also obvious that the same causes will continue to operate at an increasing ratio, and that in a very few years a rapid transit problem for the city of New York will loom up, of much more formidable proportions than the one which was agitated ten years ago. It has begun to loom up now, indeed. The present elevated lines are already burdened with a traffic to the full extent of their capacity, unless it can be more evenly distributed through the hours of the day. But this is out of the question. No more trains can safely be run when the rush comes mornings and evenings, than are now run. The length of the trains cannot be increased without increasing the length of the station platforms, and heavier trains imply, of course, heavier engines, and those now in use are already as heavy as the strength of the structures will permit, and considerably heavier than was thought to be necessary when the roads were built. The perishable nature of the structures is another element that has to be considered. Whether, with the present strain upon them, they can be kept in a safe and serviceable condition for an indefinite period by vigilant watching and continuous repairing, or whether the time will come, and how soon it will come, when a complete renewal and reconstruction will be necessary, are questions that can be answered more definitely, perhaps, five or six years hence.

Assuming that the population of the city will continue to increase in the same ratio that it has for the last three decades, and that there will be a corresponding increase in passenger traffic, it seems very evident that within six years, or in 1890, provision will have to be made for the transportation of not less than 425,000,000 of passengers per year within the city limits; and as the streets are already sufficiently obstructed by elevated roads, the alternative of sunken or subterraneous lines will have to be confronted at no very distant day.

LIGHT AND DARK COLORS ON PASSENGER CARS.

This subject has been undergoing discussion of late in the *Painters' Magazine*, and among the articles in reference to it which have appeared it its columns, is one of special interest by Mr. M. W. Stines, containing m ch information of a practical kind derived from long experience. Facts and figures are given showing the relative merits of light and dark colors in respect to wear and durability. The results of some experiments are also given, showing the surface heat of these colors when exposed to the sun. These experiments, although made with great care, are not altogether conclusive, and it is possible that different results might have been obtained by a slight change in the arrangement of the thermometers.

The tests were made as follows: A set of blocks were painted upon one side to represent the panels of a car, some of the blocks being painted with dark colors and others with light. Holes were bored into these blocks on the sides opposite the paint to within a fraction of an inch of the painted surfaces, and after these surfaces had been exposed to the sun thermometers were inserted in the holes and the temperatures noted, the bulbs of the instruments being separated from the paint by a slight thickness of wood Other experiments were made by using blocks of wood two inches thick and nine inches long, some painted black and some white, and into the centers of which three-quarter-inch holes were bored. The difference in temperature varied from 5 to 8 degrees. In calling attention to these results, our object is to point out what may be a source of error, and to show that it may be desirable to repeat the experiments under different conditions to make sure that the deductions are correct.

Years ago, when the question of radiation was first investigated, it was held that different colors radiated heat with different degrees of intensity. The experiments which seemed to favor this theory had been made with such care that for a long time the evidence was accepted as conclusive. Other experiments made some years afterwards, and with equal care, revealed the fact that there was a difference in the radiating power of colors, and it was discovered that in the first instance the colors had been so prepared that the actual radiating surface had always been the same, no matter what color was used. When the colors were applied pure, the pigments forming the actual surfaces, and not a vehicle of some kind, the expected differences were found.

In the experiments made by Mr. Stines the layer of wood between the bulbs of the thermometers and the substance of the colors on the painted surface of the blocks may have been, and probably was, sufficient to account for the slight differences which were found between the temperatures of the light and dark colors.

Wood is a very good non-conductor of heat, and whitewood, which was probably the wood on which the colors were put, is one of the best of all. The true way to obtain the temperature of a painted surface would be to use a very sensitive thermometer with a flat spiral bulb, that could be laid upon the surface of the painted panels. One side should be thickly covered with felt to prevent the rays of the sun from affecting the reading. If all the panels are exposed to the sun for the same length of time there would be very little opportunity for error, and the actual heat to which the pigment is subjected would be very correctly ascertained.

How great this heat is, probably few persons know, for summer temperatures are usually taken in the shade. Careful experiments in the vicinity of New York have shown that in the hottest days in summer a temperature anywhere from 150° to 170° Fah., may be obtained in the sun. We have seen a thermometer laid in a grass plat in the city of Newark, N. J., rise to 145° merely from the sun's heat. This temperature, although it may seem to be extraordinary, cannot be unusual. It is no uncommon thing to find tools of iron which have been exposed to the sun during a long summer day, become too hot to handle, showing that the temperature must have risen to a point much above 160.

In regard to the durability of black colors, every one is familiar with old sign-boards, where the letters, by the protecting power of the black paint have been left in relief by the wearing away of the surrounding wood. In this case, the color has less to do with the protection, probably, than the chemical nature of the pigment. Many black colors are composed of carbon almost exclusively, and so long as they can be held on the surface, must afford a very perfect chemical protection. The carbon is itself utterly incapable of being affected by any known chemical agent. Nothing but a high heat and oxygen combined produce an affect on pure carbon, and hence in this we may have the secret of the extraordinary durability of black paint when applied to wood. A stick of wood with a charred surface will endure for years in the ground owing to the protection of the charcoal.

WE have received a copy of the *World Travel Gazette*, an illustrated monthly publication devoted to the interests of travelers. It is the successor of the "American Tourist Gazette," heretofore published by Leve & Alden, and "Travel," by the American Exchange in Europe (Limited). The initial number of the *Gazette* is very attractive in its typography and contents, and contains a mass of information of great value to tourists in this country and abroad, including elaborate and well-executed maps, notes of manners and customs, examples of routes, etc. It is published by the World Travel Co., 207 Broadway, New York, and edited by C. A. Barattoni, the well-known traveler and manager.

Steel-Tired Wheels.

[Paper read by W. R. Ellis before the New England Railroad Club, Boston.]

GENTLEMEN: You request those interested in the introduction of steel-tired wheels for engines and cars to present facts bearing on their safety and economy, and you also ask whether there is a difference in the durability and relative value of the various kinds.

Should the steel-tired wheel-makers endeavor to answer these questions exactly as they are put, the result would be a discussion of the merits of the different wheels, which, it seems to me, would accomplish little, as the use of these wheels is by no means as yet general; very few records have been made, and the wheel of the future is possibly not yet born.

A discussion of the general question is, however, certainly desirable, and will be welcomed by all wheel-makers, as well as by railroad men, and such a discussion cannot fail to bring out some of the points on which information is desired; and if facts in the shape of records are not yet satisfactory or conclusive, there are other facts of importance which should be brought to the surface as soon as possible.

In the first place, there seems to be one fact which is generally admitted, viz., that there is a demand for a steel-tired wheel. This is proved by the fact that over 100,000 are now on trial in the United States. This demand is certainly general, but it does not appear to arise from the same causes. One line of railway, for instance, with a certain set of conditions to meet and contend with, comes to the conclusion that for its service a steel-tired wheel is absolutely required—and in this case it is probably because an absolutely safe wheel is wanted, and consequently the merits of the various patterns of wheels, and their records bearing on this point, will be considered of first importance. Another line has come to the conclusion that cast-iron wheels furnish a satisfactory service for its conditions; but, as a steel tired-wheel has the advantage of being round, and has perhaps other advantages, and as they seem to be coming into fashion, it might be well to use them, provided they do not cost any more in the end than cast-iron wheels. These are the two extreme cases—one where safety is the first consideration and the cost is of secondary importance, the other where the cost is the chief element.

But there can be no question but what, in seeking for a steel-tired wheel, the railways are in the first place looking for absolute safety, which would seem to be attainable, judging from the records in other countries where steel-tired wheels are almost universally used; and they are also looking for various other advantages, some of which are known and others as yet unknown. Among the known advantages may be mentioned those resulting from the use of round wheels, viz., increased comfort for the traveling public, and a saving in wear and tear of road bed and rolling stock. If these are the chief causes of this demand for steel-tired wheels, it would seem self-evident that there should be no question of the adoption of any form of wheel which did not guarantee absolute safety, or at least a lessened liability of accidents; or, that the question of safety should be applicable only to the lowest-priced wheels. In other words, if a steel-tired wheel 33 inches in diameter, with a tire 2½ inches thick, costing $50 or upward, does not carry safety with it, it is difficult to see what other advantages it can have to make it economical.

Thus it would seem that, as this demand for a steel-tired wheel springs from different causes, according to the different conditions of wheel service, so there is a field for different patterns of wheels and different priced wheels. Obviously a wheel which would be perfectly safe and entirely satisfactory in one kind of service, and which could be made at a comparatively low cost, might not be at all satisfactory under other conditions. So that the different railways must decide several questions independently, and ascertain each for itself *why* they want steel-tired wheels in the first place; for I take it for granted that all want them if they can get them at their price. They must then find out what they want and what they can afford to pay for it, if anything, more than their cast-

iron wheel service is costing. Each railway must decide for itself some such questions as the following :

What does our wheel service cost us now, in dollars and cents, for wheels, and in incidental cost of changes and repairs, and, possibly, in some cases, for accidents? Is our present service satisfactory, or, if not, in what is it lacking, and what can we afford to pay for better service?

We are in the experimental stages of this question. The struggle of the survival of the fittest has hardly yet begun, and I think that this is proved by the fact, that apparently the question as to what steel tires can do as compared with the chilled tread of cast-iron wheels, is considered of the most importance. This question is for the tire-makers. The makers of cast-iron wheels have—to use a slang expression—got their business down to a fine point. They will sell their wheels on a mileage basis. Most of them prefer to do so. Now, what will the tire-makers do? There are only two or three of them in this country, and only two or three foreign makers competing in this market. Just consider this a moment. Here are a dozen or more prominent steel-tired wheels being offered to the railways, and new patterns are being devised almost every day. But how many makers of the wheels make their own tires?

Is it not obvious, then, that, speaking generally, the wheel-makers can put on to their wheels any tire which may be wanted? As matters now stand, it seems to me that the differences between the other parts and principles of the various steel-tired wheels are far greater than between the tires on them, which are in many cases the same. Let the makers of the tires settle what they can or ought to do, and I think that in all probability the differences between them will eventually be very slight, as I believe that they are at this present moment.

There are no records as yet of what the tires on engine and car wheels can or ought to do. Records of steel-tired car wheel service are kept systematically and carefully by a few of the railway companies, but these records are not analyzed, and therefore cover without discrimination the service of different makes of tires, made possibly by the different processes which are on trial, and therefore furnish no information on the essential points. There are records of what steel tires can do under certain other conditions, but these records may rather mislead than furnish accurate guidance, if, as the tire-makers tell us, it is one thing to make tires for engine driving wheels, and another and entirely different thing for engine leading truck wheels. Therefore, I say that this is a question for the tire-makers. They, and not the wheel-makers, must decide whether hard or soft tires will do the most work, and what is required to carry light loads, and what, if anything different, for heavy loads; and they, with the railway officers, must decide about cast-iron brake-shoes and wrought-iron brake-shoes, and as to the effect of one kind of brake or another kind, or no brake at all. There should be no difficulty in their settling these questions among themselves, or agreeing as to what can and can not be done. There are no secrets among them; the processes are all known. There may be differences arising from the use of slightly different materials, and some variations in their methods and mixtures, but the products will not differ greatly. Meanwhile, the wheel-makers must watch and wait. What is of vastly more importance to all, is to have all the points bearing on the entire wheel brought to the front, one after another, as soon as possible, and critically examined. Here is one wheel, which, we will say, is guaranteed to run 400,000 or 500,000 miles, costing $30; and another guaranteed to do the same, costing $90; and it is a tire, presumably of the same thickness in each case, which is doing the work. What makes this enormous difference in cost? Is it the tire? The tire-makers say not. Then it is in the other parts of the wheel, and what we all want to know is, what these other parts or elements are, and what they are worth to the different railways where different conditions are to be encountered; because, what is necessary on one railway may be dispensed with on another, and what one railway is ready to pay for, another does not want at all or wants for nothing. But it seems self-evident that with the different makes of tires, all selling at the same price per pound, or selling on a mileage basis, wheel-makers would all have to pay a certain sum in order to furnish the required mileage; and railway officers should know what they are getting in addition for the $60, which I have assumed to be the difference between the two extreme classes of steel-tired wheels. This difference may be exaggerated, but is not far from actual, and serves to illustrate the point which I wish to make as to the essential parts of a steel-tired wheel.

Much has been learned on this subject during the last few years, but very much remains; and while the actual facts or records may not warrant the *universal* adoption of any one wheel, these records are rapidly increasing our knowledge of what is wanted, and if they are not satisfactory, is it not a little remarkable that the demand is constantly increasing?

The question which we are discussing is put in a way which implies that if the answer is unsatisfactory, the use or the further testing of steel-tired wheels is to be abandoned. But this has only occurred to me at the close of my remarks, and only causes a moment's uneasiness. A little reflection assures me that the steel-tired wheel has come to stay; the durability of the tires depends upon the tire-makers. As to the durability of the centers, that depends on whether the railways want a durable one and will pay for it; and the relative value of the different patterns of wheels with the same tires on them depends upon what is to be derived from them and what they are required to do.

"WHAT shall I give the children? I want to make them a handsome present, you know," said a railway magnate to his wife. "Why don't you give them some of the stock in your road?" asked the wife. "what are you thinking of?" cried the R. M. in amazement. "Do you want to *drown* the children?"—*Boston Transcript.*

"CONDUCTOR," said a Chicago man on board an Illinois Central train, in a loud tone of voice, "are you sure we haven't passed St. Louis?" "Yes; we are twenty miles this side yet." "This train stops there, doesn't it?" "Yes." "Well, don't fail to let me know when we get there." Then he settled himself back in his seat, and smiled, when a St. Louis citizen leaned across the aisle, and asked him if any new buildings had been put up in Chicago since the fire.—*Kansas City Times.*

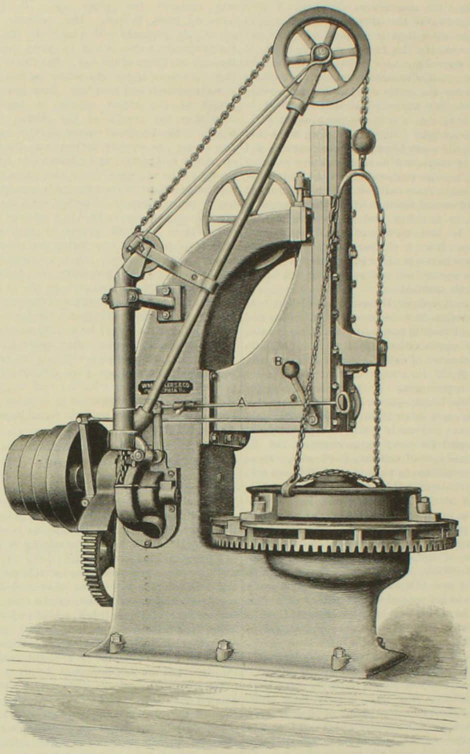


Fig. 1.—Wm. Sellers & Co.'s New Car Wheel Boring Mill.

WITH the growth of the cast-iron car-wheel industry in the United States, there has been a steady improvement in the machinery for boring the wheels, and also in the machines for turning axles.

In regard to boring car-wheels, it is to the firm of William Sellers & Co., of Philadelphia, that the credit is wholly due of introducing the system described at some length in their Treatise on Machine Tools, viz.: Of taking out the bulk of the metal on the roughing-cut with a deep cut and a moderate rate of feed, and then finishing by means of a light cut, hurried through the wheel as rapidly as the nature of the material will permit. In other words, the general principle applicable alike to boring, turning and planing metals, of finishing by a very broad feed but shallow cut, so as to give the finishing tool as little as possible to do, both in work and in time, has been kept constantly in view by this firm, and made readily applicable in the feed mechanism of their various machine tools.

They say: "The finishing cutter, having but little to do, does not wear away very rapidly. In fact, its deterioration depends more upon the time taken to run it through the wheel than upon the amount of metal removed by it. A fine feed on the finishing cut wears the tool more than a quick one. The coarser the feed, within reasonable limits, the longer the cutter will remain to size." This company have, from time to time, issued new forms of car wheel boring machines, in all of which the power feed has been so arranged as to be readily shifted from the comparatively fine feed needed in the roughing cut to the coarse feed they recommend for the finishing cut.

The engravings illustrate a new Car Wheel Boring mill made by them in which they claim to have introduced many very important improvements, which facilitate the handling of the wheels and enable a greater number to be bored per day, as well as to make the boring more perfect.

Fig. 1 shows the machine on the side to which the power crane is attached. The crane is driven from the cone pulley shaft in the machine, and therefore no extra counter-shaft or extra belt is required to operate it. The rod *A*, which operates the starting and stopping of the crane hoist, is provided with two handles; one to be used when the attendant is at the front of the machine, the other close to the upright of the crane, to be used when he is at the side or near the back of the tool; as, when he is lifting a wheel from the floor. The crane is provided with an automatic stop at top and bottom of its hoist so that it cannot overrun in either direction. No special care is required on the part of the workman who is operating it. The ball lever *B* operates a clutch on the driving shaft of the table to enable the table and the feed motion to be stopped without stopping the motion of the cone pulley or of the machinery in the upright that actuates the crane. Fig. 1 shows the crane as attached to a wheel ready for removing it from the mill, and it shows also that the vertical slide has sufficient motion to carry the boring bar up out of the way of the wheel to be lifted from the chuck.

Fig. 2 shows a wheel in place for boring, and exhibits on the side opposite to the crane, the train of gearing that operates the feed. The balance wheel *C*, at the upper end of the feed train, is used to raise or lower the balanced vertical slide and boring boring bar very quickly by hand when the feed is not in gear, and the handle *D* serves to instantly start or stop the power feed. In the feed motion train, will be observed at *F*, a set of the disks of their "improved friction feed," the movable disk *F* being set to any required position, and at the same time clamped to place by a handle shown at *E*, close to balance wheel *C*. The range of feed obtainable by means of these disks, on this machine, is from $\frac{1}{16}$ inch for the finest feed, to over $1\frac{1}{4}$ inch feed for the coarsest or finishing feed, while the range of feeds between the two extremes is practically unlimited. The vertical slide *H* has a projection *I*, at its lower end, close to where the boring bar is attached. This projection carries a slide-rest which holds a tool for facing, so arranged as to serve as a fixed tool in dressing off the narrow facing strip on car wheels, or the facing tool can be carried out, fed by hand, over the face of the wide hubs, which must be dressed for locomotive truck wheels. The cut in such case, starting in the already bored hole, and thus getting under the scale of the casting. An adjustable gauge-bar *K*, attached to the side of the frame that supports the vertical slide, can be set by means of its collar and set-screw to any height of the hub above the flange gauge of the tread, and the finger at the lower end of this bar, lowered down for this purpose, serves to indicate when enough metal has been removed from the hub.

It will be observed that the vertical slide is made rectangular, and gibbed to place with broad, flat guiding surfaces, and the makers say that it "is made of this shape to stand the great strain brought to bear in boring, with the least liability to wear, or to be set out of concentricity with the axis of the table;" and furthermore, that they "are confirmed in the opinion as to the great advantage to be derived from the use of broad, flat surfaces for the slides of machines, particularly when the function of the slide is, as in this case, to resist strains tending to rotate the sliding part."

The machine is shown provided with Wm. Sellers & Co.'s own

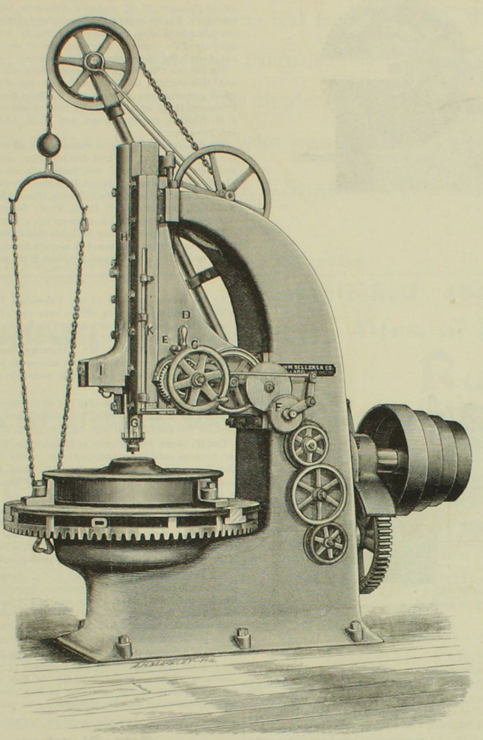


Fig. 2.—Wm. Sellers & Co.'s New Car Wheel Boring Mill.

arrangement of four cutting edges to the boring bar. The two cutters giving these four cutting edges being clamped to place independently, and each as readily shifted as a single cutter.

An important feature in this machine is, that the workman standing directly facing the upright can with his right hand start, stop or regulate the feed, while with his left hand he can as readily start and stop the rotation of the table or work the crane. He can thus control the machine in all particulars from one place, and loses no time in needless running from one side of it to the other.

Some idea of the power and speed of the machine can be gathered from the statement made by the makers, that they have on their trials of the tool, run the four-cutter bar, through the master car-builders' standard size of hole, at the rate of $\frac{5}{16}$ in. feed to the revolution on the roughing cut, enlarging the hole $\frac{1}{2}$ in. in diameter, and have finished the same hole with a feed of $1\frac{3}{8}$ in. to the revolution. In another case, the rough hole, $3\frac{1}{2}$ in., was bored to $4\frac{13}{16}$ in. and 0.655 in. on each side, with a feed of $\frac{1}{8}$ in. to each revolution.

The face-plate, or revolving table, is arranged with a concentric chuck, with three jaws, which, when made as shown on the cut, will take in wheels up to 36 inches in diameter; but as the face-plate is large enough to carry general work up to 50 inches diameter, they adapt chuck jaws to wheels of 42 inches diameter when ordered. The table is carried by a circular tongue fitted in a groove with wide wearing surfaces and ample provision for oiling. All the working parts are said to be fended from dirt below the table by guards that carry the chips into a pit below the base of the machine.

The Safest Part of a Car.

It was well said by the conductor, who, when asked what was the safest part of a car, replied, "That part which happens to be in the shop at the time of the accident." It is a popular superstition that the centre of the car is not only the safest part, but is also much the easiest riding. One of the greatest trials of a Pullman conductor's life is the fact that about every passenger asks for a lower centre berth the first thing, and is frequently indignant because it cannot be had. If the centre of a car rides any easier than the end, then our cars, built as solid and as strong as they are, spring up and down in the middle precisely as does a buckboard. If they do not, why should it ride any easier? As for safety, if you are in the rear of the last car on the train, and another train runs into the rear, you are liable to get hurt. In all other accidents you can conjure up as liable to occur, it is the safest. If a head collision, there is nothing back of you to add force to the blow. If the car leaves the track and collides with a bridge or any obstruction on a side track, it will not be in your end. If the train is thrown down an embankment there is nothing to land on top of you. Then, this location is the most pleasant. From it you can watch all the movements of your fellow passengers, often a good way of passing the hours of a long and tedious journey. If your eye happens to catch a particularly fine view, you can, by turning in your seat or stepping to the door, take it all in. If there is a safest part of a train, it is in the last seat in the the last car.—*Elmira (N. Y.) Railroad News.*

At Last!

The following communication from a Western correspondent will be read with peculiar interest by a large number of railway men who are waiting in a hopeless sort of way for some practical solution of the car-coupling problem. If the confidence of our correspondent in the capabilities of his device is not misplaced, his name will hereafter be associated with an important epoch in railway progress, as well as in the progress of invention—a distinction which will be a fitting reward for his indomitable perseverance. His communication is as follows:

THE NE PLUS ULTRA OF CAR COUPLERS.

PERFECTION AT LAST.

To the Editor of the National Car Builder:

I have just invented my twentieth automatic draw-bar for freight cars. It is a thrible automatic coupling. Practical and automatic with every variety of draw-bar in use. It is entirely practical with the three-link bar, or any other bar, hook or link. It has no loose parts to lose or be removed by meddlesome persons, uncouples from either side of train or from top of car. Being an old railroad conductor, I feel safe in saying my twentieth thrible automatic coupler, for universal practicability has not been surpassed by any inventive genius now living. My bar is as simple as the simplest; it is as cheap as the ordinary three-link bar. I will be able to show it in about four weeks.

Respectfully,
A. J. CHAPEL.

ARKANSAS CITY, Kan.,
Feb. 7, 1885.

New Publications.

LOCOMOTIVE ENGINE RUNNING AND MANAGEMENT: A Treatise on Locomotive Engines, showing their Performance in Running Different Kinds of Trains with Economy and Dispatch; also Directions regarding the Care, Management and Repairs of Locomotives and all their Connections. By Angus Sinclair. pp. 390. John Wiley & Sons, New York.

This work was originally suggested by the experience of the author as a locomotive engineer, and the information contained in it is the result of prolonged investigation of the many peculiarities observed in the construction, running and handling of locomotives. It is in every respect a work of exceptional value as compared with other publications of its class, and will be widely appreciated among master mechanics, locomotive engineers and firemen, shopmen and others who desire to increase their stock of information upon the subjects treated. The contents of the volume are admirably arranged, there is no unnecessary technicality, and the style is so simple and clear as to be adapted to the comprehension of every reader.

The work abounds in useful hints and suggestions designed to aid young and inexperienced engineers in running their engines economically with the least liability of breakage, and also what to do in case of accidents and emergencies. The construction of the different parts and their mutual relations are clearly described, also the principles involved in the application of power derived from coal combustion. The action and construction of the various appliances used in connection with the locomotive are elucidated with the aid of carefully-prepared engravings. This portion of the book will be as valuable to master mechanics, foremen and shopmen, as it is to engineers.

The chapters on the management of locomotives in running passenger and freight trains, will be found of special interest to young and inexperienced engineers; also the chapters relating to the inspection of locomotives, getting ready for the road, getting up the hill, and finishing the trip, these having reference to fast freight trains. With reference to fast passenger trains, the author gives, as an example, his observations during a trip on the New York and Chicago Limited Express over the Pennsylvania route. The following chapters treat in a general way of the care of locomotives, with explanations relative to the conditions of engines, which engineers of limited experience will find of great practical advantage. The subjects embraced in these chapters are, hard-steaming engines; shortness of water; pump disorders; injectors; boilers and fire-boxes; accidents to valves, cylinders and steam connections; getting off the track, etc. Much is said relative to the construction and repairing of engines, embracing the details of connecting and side rods, wedges, valve motion, the shifting link, setting the valves, laying out the link motion, etc. There are also separate chapters on the Westinghouse and Eames brakes, and the Stevens and Joy valve-gears.

In the thirty pages devoted to the Westinghouse air-brake all the details of the apparatus are explained so as to be understood by locomotive engineers of the most ordinary grade of intelligence who will give the necessary attention to the explanations given. In the concluding chapters are rules for calculating the power of locomotives and resistances of trains; also, some valuable information on the purification of water for locomotive boilers, and descriptions of the most common methods now in use for this purpose. Taken as a whole, the work is so comprehensive in its scope as to make it difficult to convey an adequate idea of its merits in a brief notice. The more it is studied and used, the more thoroughly it will be appreciated as a standard manual of information for those who have anything to do with the management of locomotives, and as a welcome and valuable contribution to railway mechanical literature.

THE FIREMAN'S GUIDE. Translated and revised from the Swedish by Karl P. Dahlstrom, M. E. pp. 28. E. & F. N. Spon, New York.

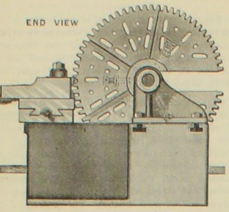
This little work consists of two general divisions, one containing rules and directions for the care and management of boilers, and the other a summary of rules for the guidance of firemen and engineers. Although it is very compact in the arrangement of the information it contains, the essential points pertaining to a fireman's duties are all very fully and clearly presented. As a pocket manual, it will be found extremely useful to every fireman who makes himself familiar with its contents, teaching him many things that are indispensable to the safe and economical management of boilers, and which would otherwise have to be learned by experience, with the risks and hazards which are inseparable from imperfect knowledge and instruction. The book was originally published in Sweden by a society of experienced engineers, and the present translation and revision is from the third edition of the original work.

Richardson and Allen-Richardson Balanced Slide-Valves: We have received an illustrated descriptive pamphlet just issued by Mr. F. W. Richardson, Troy, N. Y., setting forth the merits and economical advantages of these valves and explaining the peculiarities of their construction. The pamphlet also contains illustrated descriptions of the Richardson Relief Valve, and a model of Link and Valve Motion that can be adjusted to represent the valve gear of any four-wheel connected locomotive or other link-motion compound engine. There is also appended a large number of testimonials from railway men and locomotive builders, expressing entire satisfaction with the performance of the Richardson valves.

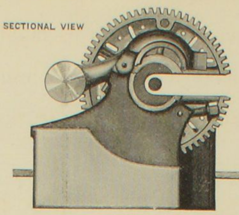
Passenger, Parlor and Postal Car Lamps and Locomotive Headlights.—This is the title of an illustrated supplementary catalogue recently issued by the Adams & Westlake Manufacturing Co., of Chicago, for the convenience of railway officials and car-builders in selecting lamps and headlights. The cuts represent the leading and most popular styles of lamps shown in the catalogue issued by the company in 1882, with others of late and improved design. Special attention is directed to an improved device for raising the shade-holder to withdraw the shade or chimney or to remove the burner on the company's "Tornado" chandeliers, the difficulty of doing which has hitherto caused a great deal of breakage. The advantages of separate instead of a central fount are pointed out and illustrated. Price list of lamps will be mailed on application.

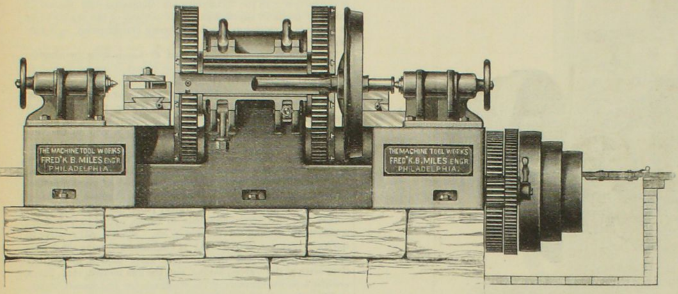
A NEW DOUBLE-WHEEL LATHE.

END VIEW



SECTIONAL VIEW





BACK VIEW

THE accompanying cuts illustrate a new Double-Wheel Lathe, adapted especially to turning steel-tired wheels up to 42 inches in diameter, which has just been brought out by the Machine Tool Works (formerly Ferris & Miles), Frederick B. Miles, engineer, Twenty-fourth and Wood streets, Philadelphia, Pa.

In this machine, the headstocks and face-plates, instead of being outside the wheels, are placed between them, which is the reverse of the usual method, and the face-plates are made with a gap, as shown in the cut, so as to allow the axles to be rolled freely in and out of the lathe. To facilitate this, the heavy cast-iron spindle upon which the face-plates are fastened, is also provided with a similar gap; and the headstock bearings, in which it revolves, are provided with a hinged and counterweighted cap, which can be lifted when desired to allow the wheels and axles to be thus rolled in and out. The driving gear is so arranged that no filling of this gap is required.

The tailstocks are placed upon the outer ends of the machine, and take the centers of the axle in the usual way; or chucks may be adapted to them, by which the axle may run on its own journals as well as on the centers.

The hub of each face-plate is provided with three large steel set-screws, 1½ inches diameter, for grasping the axles close behind the wheels, and thus doing away with all chatter or vibration. Means are also provided for securing the wheels firmly against the face-plates, so that they may be driven as steadily and powerfully as if they were all one piece with them.

The driving gear is made with enormous power, with the object of enabling the wheels to be turned, without chattering, by means of a broad, flat tool, in *one* cut, somewhat as a chilled roll is turned after which the flange can be shaped by another tool of proper form.

The bed has gaps to receive the wheels, and its top is brought up to 12 inches below the centres, thus affording a close and solid support to the tool slides, head and tailstocks, etc., which are all of great strength.

The tool slides can be moved in to turn the journals when required and the tailstocks can be moved up to take wheels which have inside journals.

The feed motions are by hand or automatic and range from very fine to very coarse.

All parts are made simple and strong, so that any intelligent person, though not a mechanic, may soon learn to operate the machine.

To use the lathe to the best advantage it should be set with centers about 23 inches above floor, so that 42-inch wheels can be rolled into it on a level, or, if desired, skids may be used.

The Laufman Screw Brake.

This device is operated by simply turning the brake shaft in the usual way. The shaft is threaded on its lower extremity, and embracing this lower portion of the shaft is a threaded wrist attached to the short arm of a lever. The revolving threads of the shaft carry up the arm of the lever, and thus, through the bell-crank, immediately apply the brake, which in all details is of the ordinary type. The Laufman brake is not intended to fill the requirements of a continuous brake, but to co-operate with it when necessary like other detached brakes, and taking the place of the chain-winding pattern. Its advantages may be stated as follows:

It dispenses with the constantly breaking dogs and ratchets, for the wheel remains firmly at any point of revolution without fastening; it will not slide wheels, for with it a spring is safely used on the draw-rod, and the pressure can be graduated to prevent skidding; by the bottom wheel the brake can be checked from the ground, and thus in switching much time is saved and much expensive bunting at high speeds is avoided. In one test a brakeman checked a car running 12 miles an hour down to a speed of one mile per hour, and made a coupling, all from the ground. When applied to passenger coaches and sleepers it is perfectly noiseless, and the rattle of the old ratchet and dog of the chain-brake is avoided. The brake is set with one-third the expenditure of power required by the chain-brake and in one-third the time; it cannot be released by jerking of the train, or butting of cars or engines. In a test to determine this feature, the car was stuck hard three times with a switch engine, with no effect upon the brake whatever. It applies the checking power rapidly and strongly. In one test a car running 20 miles an hour was stopped in 20 feet.

The brake has been adopted by the Minneapolis & St. Louis Railway, and is being applied to all their cars. One of this company's cars equipped with this brake recently closed a trip of over five months' duration, traveling in all about 4,100 miles over various Western roads, and during that service all the claims above made were practically verified. The cost of the brake is very slightly in excess of the common chain-brake, and the latter is readily utilized in making the change. The Laufman Screw Brake Co., of Minneapolis, Minn., may be addressed for further information in regard to it.

Railway Manufactures in Detroit.

The *Detroit Trade Journal*, in a notice of the manufacturing enterprises of Detroit, refers to two of the prominent business men of that city and the manufacturing establishments with which they are identified, as follows:

Messrs. Newberry & McMillan are without question two of the most prominent business men of the city or State. They are men to whom Detroit is largely indebted for a very considerable portion of its fame as a manufacturing center, and for a goodly proportion of its financial prosperity as well. These two gentlemen are the head and front of three distinct companies, known as the Michigan Car Company, the Detroit Car Wheel Company, and the Baugh Steam Forge Company.

The Michigan Car Co. manufacture box, stock, platform, coal, and all kinds of freight cars, and are the leading company in that line, and one of the first in the country. The company is composed of Mr. James McMillan, President; Hugh McMillan, Vice-President; James McGregor, Superintendent; W. H. Dyar, Assistant Manager; W. K. Anderson, Treasurer, and Joseph Taylor, Secretary. The company does a very extensive business, their trade extending from ocean to ocean, being largely with the principal railways of the country. The excellence of the work done by it has given it the lead of nearly all competitors.

The Detroit Car Wheel Co. manufacture car wheels, railway and other castings, and are said to be one of the principal car wheel manufactories of the world. Its officers are James McMillan, President; Hugh McMillan, Vice-President and General Manager; J. H. Whiting, Superintendent, and W. K. Anderson, Secretary and Treasurer.

The Baugh Steam Forge Co. manufacture all kinds of merchant, bar and forged iron, car and driving axles, coupling pins, links, shaftings, draw-bars, etc., and make railroad work a specialty. The firm is composed of James McMillan, President; Hugh McMillan, Vice-President; John B. Baugh, General Manager; Samuel A. Baugh, Superintendent; R. D. Field, Secretary, and W. K. Anderson, Treasurer. This company has a patronage unrivaled.

We find by inquiry among the trade that these three companies stand at the head of the heaviest manufacturing interests of the State, and in their line have no superiors in the world.

AT the annual meeting of the Vulcanized Fibre Co., of Wilmington, Del., the following officers were elected: President and General Manager, Wm. Courtenay; Vice-President, Wm. G. Gibbons (President of the Pusey & Jones Co.); Superintendent and Treasurer, Frank Taylor. Mr. Courtenay has long been connected with the company, and its success is largely due to his practical business ability and capable management. His office is at 15 Dey street, New York.

THE ENSIGN MANUFACTURING Co. at Huntington, W. Va., has received an order from the Chesapeake, Ohio & Southwestern road for 200 gondola coal cars, 34 ft. long and 20 tons capacity.

THE MACHINE TOOL WORKS, of Philadelphia, F. B. Miles, Engineer, recently put a steam hammer in the works of the Cleveland City Forge & Iron Co., in Cleveland, O., which is said to be the heaviest hammer in the United States. The steam cylinder is 38 in. diameter, and the frame is 38 ft. high.

THE PENFIELD BLOCK CO., Lockport, N. Y., has been organized as a corporation under the old firm name, the management being the same as heretofore. The officers of the new company are A. S. Beverly, President; Jesse Peterson, Vice-President; Z. W. More, Secretary; and M. H. Tarbox, Treasurer.

WE have received from Bradley & Co., Syracuse, N. Y., two pocket-knife blades of different patterns, forged under a 40-pound Bradley cushioned helve hammer, and just as they came from the dies. These specimens show the extreme accuracy and fineness with which this hammer does its work, and which is mainly owing to the perfect control of the operator over the weight of the blows.

WE are informed that the business of the late firm of L. G. Tillotson & Co., the death of the senior partner of which we notice elsewhere, will be continued under the old firm name, and under the management of the surviving partner, Gen. E. S. Greeley, who was associated with Mr. Tillotson for the past twenty years.

Our Directory.

We note the following changes since our last issue. Our readers will do us a great favor by giving us prompt notice of any changes that may come to their knowledge or of any errors that may be noticed in our list:

Baltimore & Ohio.—Thomas Taylor, recently at the Newark shops, has been appointed Master Mechanic of Sandusky shops in place of Andrew Beckert, who has been appointed Master Mechanic of the shops at Mount Clare, Baltimore, in place of I. N. Kalbaugh, promoted to Master of Machinery of Pittsburgh Division, vice J. E. Sampsel, resigned. W. P. Harris has been appointed Superintendent of Main Stem Division west of Cumberland, Md., with headquarters at Cumberland.

Cape Fear & Yadkin Valley.—W. M. S. Dunn (late Engineer and Superintendent of the Virginia Midland) has been appointed General Superintendent.

Chicago, Milwaukee & St. Paul.—S. S. Merrill, General Manager of this road, died at Milwaukee, Feb. 8.

Chicago & Great Southern.—George C. Kimball has been appointed General Manager, with office at Attica, Ind.

Louisville, Evansville & St. Louis.—C. A. Darlton has resigned the office of Superintendent, and R. S. Minor has been appointed General Superintendent.

Mississippi & Tennessee.—James M. Edwards has been appointed General Manager. He is also Superintendent of the Louisville, New Orleans & Texas road.

New York, Lake Erie & Western.—J. Jolls, Superintendent of the Susquehanna Division, has resigned, and R. B. Cable, late General Superintendent of the Denver & Rio Grande road, has been appointed as his successor.

New York, Pennsylvania & Ohio.—J. M. Ferris has resigned the office of General Superintendent of this road, and Charles Paine (late General Manager of the New York, West Shore & Buffalo) has been appointed his successor.

Pittsburgh & Castle Shannon.—James M. Bailey has resigned the office of General Superintendent of this road.

Seaboard & Roanoke.—Enoch G. Ghio, General Superintendent of this road, died at Norfolk, Va., Feb. 18, after a short illness.

Southern Central.—H. D. Titus is appointed Acting Superintendent of this road in place of James G. Knapp, retired.

St. Paul, Minneapolis & Manitoba.—H. C. Ives is appointed Assistant General Manager of the lines of this company, with office at St. Paul, Minn.

Texas & St. Louis.—J. R. Hastings, Superintendent of the Missouri & Arkansas Division, has resigned.

Wabash, St. Louis & Pacific.—Theo. Bergold has been appointed Master Mechanic of the Middle Division, with office at Springfield, Ill.

Wisconsin Central.—W. E. Carroll, having resigned as Superintendent of the Middle & Northern Division and Wisconsin & Minnesota road, A. A. Allen's jurisdiction as Superintendent is extended over the line from Stevens Point to Ashland. G. T. Wiswell is appointed Superintendent of the Wisconsin & Minnesota, and of the Chippewa Falls & Western roads, with headquarters at Chippewa Falls.

How natural it is to try to get *something* for *nothing*, and expect satisfaction in the use of materials that look well but have no real merit. This is exemplified in painting cars as much as anywhere. The Perfect Method Paints manufactured by us insure durability and saving of time otherwise lost in repainting, or loss by decay of the wood and rust of the iron when the paint has perished, as most of the ordinary paint soon does.

THE SHERWIN-WILLIAMS CO.,

CLEVELAND & CHICAGO.

Manuf'rs High Grade Paints and Colors for Railway use.

Established 1856.

Shipman & Bolen, Mfrs. of fine Railway Varnishes.

Our Varnishes excel in durability,

Newark, New Jersey.

CAR-BUILDERS' DICTIONARY.

COMPILED UNDER THE DIRECTION OF THE MASTER CAR-BUILDERS' ASSOCIATION.

REVISED EDITION PUBLISHED DECEMBER, 1884.

This book is twice as large as the original edition, and contains 2,188 engravings, including exact engravings of American Cars of every description, and of the different kinds of Trucks, Wheels, Brakes, Couplings, Seats, Lamps, Heaters, and all Car Furnishings in general use, in the minutest detail. All the detail drawings are made to scale, and each engraving is briefly described under the definition of its name. All terms in general use in car-building are defined. This is the most elegant, as well as the most valuable book on American cars ever published, and forms a volume in character and appearance such as usually sold for $5.00. No one connected in any capacity with car-building can afford to be without a copy for study and reference.

WE OFFER

A Copy of the CAR-BUILDERS' DICTIONARY (Price $3.00) and Subscription to the NATIONAL CAR-BUILDER for one year (Price $1.00) for

$3.00.

Address THE NATIONAL CAR-BUILDER, Morse Building, New York.

A NEW BOOK

Which every Railway Man should possess.

THE BIOGRAPHICAL DIRECTORY OF THE RAILWAY OFFICIALS OF AMERICA.

This remarkably interesting and useful book, which has been in careful preparation more than a year, is now ready for delivery, and as only a limited edition has been printed, it is important that all who desire copies shall send their orders soon. It consists of an alphabetically arranged list of the general, assistant-general and division railway officers of the United States, Canada and Mexico, with the official position and business address of each, and a brief detailed history of the railway career of most of them, together with excellent portraits of the following prominent gentlemen:

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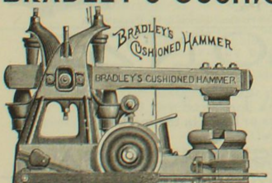

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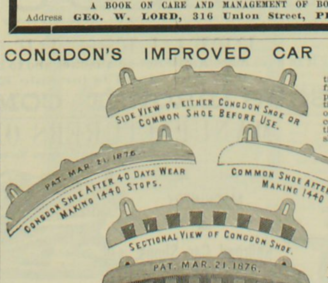

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DIRECTORY

of the Railroads of the United States and Canada, showing the gauge, length of road, number of locomotives and number of cars; and giving the names and titles of their principal officers in charge of the operating, purchasing and rolling stock departments.

A

Adirondack R. R. 4-8½ gauge 60 m. 3 lo. 62 cars.
C. E. Durkee, *Supt* .... Saratoga, N. Y.
Jacob Myers, *M. M.* .... Saratoga, N. Y.
Jas. J. Traver, *M. C. B.* .... Saratoga, N. Y.
Addison & Northern Penn'a Ry. 3 g. 51 m. 5 lo. 50 c.
F. M. Baker, *Gen. Supt* .... Addison, N. Y.
Alabama Great So'n R. R. (*See Cin., N. O. & T. P.*)
Albany & Susquehanna R. R. (*See D. & H. Canal Co.*)
Albemarle & Raleigh R. R. 4-8½ g. 33 m. 3 lo. 35 c.
Jas. H. Petty, *Gen. Supt* .... Tarboro, N. C.
Albert Ry. 4-8½ g. 51 m. 3 lo. 35 cars.
G. A. Robinson, *Man. & Pur. Agt.* Hillsboro, N. B.
Jas. McKay, *M. M. & C. B.* .... Hillsboro, N. B.
Alexandria & Fredericksburg Ry. (*See Penna. R. R.; (7) Div.*)
Alexandria & Washington R. R. (7) Div.
Allegheny Valley R. R. 4-9 g. 259 m. 70 lo. 2202 c.
David McCargo, *Gen. Supt. & Pur. Agt.*; and
C. B. Price, *Supt.* (Riv. Div.) .... Pittsburg, Pa.
A. A. Jackson, *Supt.* (L. G. Div.) Reynoldsville, Pa.
W. A. Wood, *M. M.* .... Verona, Pa.
R. Gunning, *M. C. B.* .... Verona, Pa.
Alliance, Niles & Ashtabula R. R. (*See Penna. Co.*)
Annapolis & Elk Ridge R. R. 4-8½ g. 20 m. 4 lo. 29 c.
W. H. Bians, *Supt. & Pur. Agt.* Annapolis, Md.
John L. Beall, *M. Mach* .... Annapolis, Md.
Anniston & Atlantic R. R. 3 g. 9 m.
Tho. K. Scott, *Supt* .... Anniston, Ala.
Antwerp & Paulding R. R. 4-8½ g. 6 m. 4 lo. 63 c.
E. C. Munson, *Gen. Man* .... Antwerp, O.
William Fitzsimmons, Jr., *Pur. Agt.* Antwerp, O.
Arizona & New Mexico Ry. 3 g. 71 m. 3 l. 60 cars.
W. H. Jones, *Gen. Supt. & P. A.* Lordsburg, N. M.
W. C. Boylan, *M. M. & M. C. B.* Lordsburg, N. M.
Arkansas Midland R. R. 3-6 g. 63 m. 4 lo. 45 cars.
A. H. Johnson, *Pr. & Gen. Man.* .. Helena, Ark.
J. B. Johnson, *M. M. & M. C. B.* .. Helena, Ark.
Arkansas & Louisiana Ry. 4-8½ g. 28 m.
J. D. Beardsley, *Supt* .... Washington, Ark.
Asheville & Spartanburg R. R. 5 g. 49 m. 2 lo. 12 c.
Jas. Anderson, *Supt. & Pur. Agt.* Spart'b'g, S. C.
M. M. .... Spartanburg, S. C.
Ashland Coal & Iron Ry. 4-8½ g. 22 m. 7 lo. 432 c.
Douglas Putnam, Jr., *Gen. Supt.* Ashland, Ky.
Robt. Peebles, *Pur. Agt* .... Ashland, Ky.
E. M. Roberts, *M. M.* .... Ashland, Ky.
Ashtabula & Pittsburgh Ry. (*See Penna. Co.*)
Atchison, Topeka & Santa Fé R. R.
4-8½ g. 2,020 m. 348 lo. 9,629 cars.
A. A. Robinson, *Gen. Man* .... Topeka, Kan.
Geo. B. Harris, *Asst. Gen. Man* .... Topeka, Kan.
Geo. Hackney, *Supt. Mach* .... Topeka, Kan.
Clem. Hackney, *Asst. Sup. Mach. Dept.* do.
Geo. Hargraves, *Pur. Agt* .... Topeka, Kan.
Eastern Div.: D. J. Chase, *Supt* ..... Topeka, Kan.
Henry Hull, *G. F. Car Dept* .... Topeka, Kan.
John Fagan, *M. M.* .... Atchison, Kan.
J. M. Smith, *M. M.* .... Kansas City, Mo.
Alfred Taylor, *M. M.* .... Emporia, Kan.
Mid. Div.: H. R. Nickerson, *Supt.* Nickerson, Kan.
W. Y. Johnson, *M. M.* .... Nickerson, Kan.
W. Div.: C. M. Rathburn, *Supt* ..... La Junta, Col.
A. C. Stiles, *M. M.* .... La Junta, Col.
D. H. Dotterer, *M. M.* .... Raton, N. M.
Las Vegas Div.: Chas. Dyer, *Supt.* Las Vegas, N. M.
F. B. Woodruff, *M. M.* .... Las Vegas, N. M.
J. H. Holman, *M. M.* .... Wallace, N. M.
Rio Gr. Div.: P. F. Barr, *Supt.* San Marcial, N. M.
E. Hackett, *M. M.* .... San Marcial, N. M.
H. P. Olcott, *M. M.* .... Deming, N. M.
Geo. A. Hancock, *M. M.* .... El Paso, Tex.
Sonora Div.: 265 m.
L. H. Waugh, *M. M.* .... Guaymas, Mex.
Kan. C'y., Law. & So. Kan.
4-8½ g. 399 m. 24 lo. 787 c.
J. L. Barnes, *Supt* .... Lawrence, Kan.
T. D. Volk, *M. M.* .... Ottawa, Kan.
Atlanta & West Point R. R. (*See Western of Ala.*)
Atlantic & Danville Ry. 3 g. 17 m.
G. G. Sweatt, *Gen. Man* .... Waverly, Va.
Atlantic & North Carolina R. R. (*See Midland; N. C.*)
Atlantic, Tenn. & Ohio R. R. (*See Rich. & Dan.; (2) Div.*)
Atlantic & Pacific R. R. 4-8½ g. 575 m.
F. W. Smith, *G. Supt* .... Albuquerque, N. M.
F. P. Wherry, *Pur. Agt* .... St. Louis, Mo.
Geo. Chalender, *Supt. M. P. & M.*, and
Geo. F. Chalender, *A. Supt.* Albuquerque, N. M.
Augusta & Knoxville R. R. (*See Port Royal & Aug.*)
Austin & Northwestern R. R. 3 g. 60 m. 5 lo. 75 c.
J. A. Rhomberg, *Gen. Man* .... Austin, Tex.

B

Bachman Valley R. R. (*See Han. Junc., Han. & Gett.*)
Balt. & Delaware Bay R. R. 4-8½ g. 50 m. 3 lo. 13 c.
Fred Gerker, *Gen. M. & P. A.* Chestertown, Md.
Baltimore & Hanover R. R. (*See H. J., H. & G.*)
Baltimore & Ohio R. R.
4-8½ g. 1,612 m. 574 lo. 17,339 cars.
B. Dunham, *Gen. Man* .... Baltimore, Md.
N. S. Hill, *Pur. Agt* .... Baltimore, Md.
Main Stem Div.: 4-8½ g. 972 m.
W. M. Clements, *Gen. Supt* .. Baltimore, Md.
A. J. Cromwell, *M. of M.* .... Baltimore, Md.
E. W. Grieves, *M. C. B.* .... Baltimore, Md.
M. M. .... Baltimore, Md.
Wm. Edwards, *M. M.* ..... Martinsburg, W. Va.
Sam. Houston, *M. M.* .... Piedmont, W. Va.
Robert Maxwell, *M. M.* .... Cumberland, Md.
S. B. Crawford, *M. M.* .... Grafton, W. Va.
Alex. Laird, *M. M.* .... Parkersburg, W. Va.
W. B. McClung, *M. M.* .... Wheeling, W. Va.
Pitts. Div.: J. T. Harahan, *Gen. Supt.* Pittsburgh, Pa.
I. N. Kalbaugh, *M. of M.* ..... Connellsville, Pa.
Trans-Ohio Divs.: G. J. Foreacre, *G. Supt.* Newark, O.
W. H. Harrison, *M. of Mach* .... Newark, O.
E. L. Weisgerber, *M. M.* .... Newark, O.
H. M. Ingler, *M. M.* .... Bellaire, O.
O. B. Perkins, *M. M.* .... Zanesville, O.
Thos. Taylor, *M. M.* .... Sandusky, O.
F. J. Gunther, *M. M.* .... Chicago Junction, O.
Chi. Div.: F. H. Britton, *Supt. Trans.* Chicago, Ill.
Benj. Lowther, *M. M.* .... Garrett, Ind.
W. H. Wilkinson, *M. M.* .... Kingston, Ill.
Newark & Straitsville Div.: N. Criswell, Shawnee, O.
Baltimore & Philadelphia. 4-8½ g. 40 m. 7 lo. 35 c.
B. Dunham, *Gen. Man* .... Baltimore, Md.
D. Connell, *Supt* .... Wilmington, Del.
Baltimore & Potomac R. R. (*See Penna. R. R.; (7) Div.*)
Bangor & Piscataquis R. R. 4-8½ g. 63 m. 4 lo. 87 cars.
Arthur Brown, *Supt. & Pur. Agt.* Bangor, Me.
C. S. Nason, *M. M.* .... Bangor, Me.
J. W. Comins, *M. C. B.* .... Oldtown, Me.
Bangor & Portland Ry. 4-8½ g. 25 m. 3 lo. 3 c.
C. Miller, *Pres. & Gen. Man.* .. Blairstown, N. J.
Barclay R. R. 4-8½ g. 16 m. 6 l. 200 c.
F. F. Lyon, *Supt* .... Barclay, Pa.
J. A. Hardenburg, *Pur. Agt.* ..21 Cort. st., N. Y.
Wm. Johnson, *M. M.* .... Towanda, Pa.
Batesville & Brinkley R. R. 3 g. 40 m. 3 lo. 42 c.
R. W. Martin, *Pres* .... Little Rock, Ark.
W. J. Thompson, *Gen. Man* ... Little Rock, Ark.
E. Summerfield, *Gen. Supt* .... Brinkley, Ark.
John White, *M. M.* .... Brinkley, Ark.
Bath & Hammondsport R. R. 3 g. 10 m.
Allen Wood, *Gen. Man* .. Hammondsport, N. Y.
Baton Rouge, Grosse Tête & Opelousas R. R.
5-6 g. 29 m. 3 lo. 12 c.
D. C. Montan, *Gen. Supt* .... Port Allen, La.
Bedford & Bloomfield Ry. 3 g. 43 m. 5 lo. 86 cars.
Jas. W. Kennedy, *Gen. Supt. & Pur. Agt.*; and
Capt. John Thumser, *M. M.* .... Bedford, Ind.
Jas. Richards, *M. C. B.* .... Bedford, Ind.
Bellaire, Zanesville & Cin. Ry. Co. 3 g. 112 m. 5 lo. 71 c.
S. L. Mooney, *Pres* .... Woodsfield, O.
W. R. Crumpton, *Gen. Man* .... Zanesville, O.
C. E. Hill, *M. M.* .... Zanesville, O.
Bell's Gap R. R. 4-9 g. 25 m. 5 lo. 148 cars.
R. G. Ford, *Supt. & Pur. Agt.* .. Bellwood, Pa.
Geo. Van Brunt, *M. M.* .... Bellwood, Pa.
P. Zimmerman, *M. C. B.* .... Bellwood, Pa.
Belt R. R. 4-8½ g. 12 m. 10 lo.
W. P. Ijams, *Supt* .... Indianapolis, Ind.
Belt Ry. 4-8½ g. 27 m.
Jas. D. Carson, *Gen. Man* .... Chicago, Ill.
R. W. Johnson, *M. M.* .... Chicago, Ill.
Bennington & Glastonbury. 4-8 g. 10 m.
R. C. Root, *Pres* .... Bennington, Vt.
Bennington & Rutland Ry. 4-8½ g. 59 m. 10 lo. 236 c.
F. C. White, *Supt. & Pur. Agt.* Bennington, Vt.
G. W. Blanchard, *M. M.* .... Rutland, Vt.
Berlin Branch R. R. (*See Han. Junc., Han. & Gett.*)
Bingham, Canyon & Camp Floyd (*See Den. & Rio Gr.*)
Bladen, Columbus & Florida. 4-8½ g. 16 m. 2 lo. 2 c.
John Colville, *Pres* .... Wilmington, N. C.
Bodie & Benton Ry. & Com. Co. 3 g. 34 miles.
Thomas Holt, *Supt. & Pur. Agt* ..... Bodie, Cal.
E. H. Barton, *M. M. & C. B.* .... Bodie, Cal.
Boston, Barre & Gardner. 4-8½ g. 37 m. 8 lo. 108 c.
H. H. Marshall, *Supt. & P. A.* .. Worcester, Mass.
Frank I. Goodwin, *M. M.* .... Worcester, Mass.
Boston, Hoosac Tunnel & W'n Ry.
4-8½ g. 87 m. 18 lo. 1,038 cars.
H. L. Morrill, *Gen. Man.* .. Mechanicsville, N. Y.
C. H. Cory, *Pur. Agt* ..... Mechanicville, N. Y.
C. H. Cory, *Supt. & M. M.* .. Mechanicville, N. Y.
John S. Ellis, *M. C. B.* ...... Mechanicville, N. Y.
Boston, Revere Beach & Lynn R. R. 3 g. 9 m. 7 lo. 46 c.
C. A. Hammond, *Supt. & P. Agt.* Boston, Mass.
R. D. Sutherland, *M. M.* .... Boston, Mass.
John Cognlan, *M. C. B.* .... Boston, Mass.
Boston, Winthrop & Point Shirley R. R.
3 g. 10 m. 1 lo. 8 c.
C. A. Parks, *Supt* .... Boston, Mass.
J. W. Davis, *M. M.* .... Winthrop, Mass.
Boston & Albany R. R. 4-8½ g. 372 m. 245 lo. 6,111 c.
W. H. Barnes, *Gen. Man.* .... Boston, Mass.
Edw. Gallup, *Gen. Supt* ...... Springfield, Mass.
A. B. Underhill, *Supt. M. P.* ... Springfield, Mass.
F. D. Adams, *Gen. M. C. B.* .... Allston, Mass.
J. T. Chamberlain, *For. C. shop* Allston, Mass.
H. B. Chesley, *Div. Supt* .... Boston, Mass.
G. H. Colby, *Div. M. M.* .... Boston, Mass.
C. E. Grover, *Div. Supt* .... Springfield, Mass.
H. W. Eddy, *Div. M. M.* .... Springfield, Mass.
J. B. Weston, *For. Car Sh.* Springfield, Mass.
W. H. Russell, Jr., *Div. Supt.* E. Albany, N. Y.
T. B. Purvis, *Div. M. M.* .. East Albany, N. Y.
J. E. Doran, *For. Car Sh.* .. East Albany, N. Y.
Boston & Lowell R. R.
4-8½ g. 545 m. 145 lo. 4,350 cars.
C. S. Mellen, *Gen. Supt* .... Boston, Mass.
F. H. Nourse, *Pur. Agt* .... Boston, Mass.
Jas. K. Taylor, *Supt. R. S. & M.* Concord, N. H.
So. Div.: J. F. Crockett, *Supt* ..... Boston, Mass.
E. T. Sumner, *M. M.* .... Boston, Mass.
No. Div.: Geo. A. Todd, Supt ..... Concord, N. H.
C. C. Aspinwall, *M. M.* .... Concord, N. H.
Wh. Mount Div.: W. A. Stowell, *Supt.* Concord, N. H.
Geo. A. Furguson, *M. M.* .. Lake Village, N. H.
Boston & Maine R. R. 4-8½ g. 491 m. 209 lo. 4,660 c.
J. T. Furber, *Gen. Man* .... Boston, Mass.
Geo. J. Fisher, *Pur. Agt* .... Boston, Mass.
Wm. Smith, *Supt. M. P.* .... Boston, Mass.
D. C. Richardson, *M. C. B.* .... Lawrence, Mass.
West. Div.: Wm. Merritt, Jr., *Supt* Boston, Mass.
East. Div.: D. W. Sanborn, *Supt* .. Boston, Mass.
North Div.:
J. W. Sanborn, *Supt.* Wolfboro Junc., N. H.
Boston & N. Y. Air Line R. R. (*See N. Y., N. H. & H.*)
Boston & Providence R. R. 4-8½ g. 67 m. 52 lo. 1,006 c.
A. A. Folsom, *Gen. Supt. & P. A.* Boston, Mass.
Geo. Richards, *M. M.* .... Roxbury, Mass.
Jno. Lightner, *M. C. B.* .... Roxbury, Mass.
Bowling Green & Toledo R. R. 4-8½ g. 6 m. 2 lo. 4 c.
Wm. A. Wiggins, *Gen. Man.* Bowling Green, O.
Wm. A. Wiggins, *Pur. Agt.* .. Bowling Green, O.
Bradford, Bordell & Kinzua R. R. 3 g. 42 m. 6 lo. 82 c.
Bradford, Eldred & Cuba. 3 g. 54 m. 6 l. 158 c.
Tonawanda Valley & Cuba. 3 g. 60 m. 5 lo. 31 c.
J. V. D. Loomis, *Supt* .... Attica, N. Y.
Jno. Delaney, *M. M. & C. B.* ...... Bradford, Pa.
Brattleboro' & Whitehall R. R. 3 g. 36 m. 3 lo. 56 c.
(*Operated by Central Vermont.*)
Breakwater & Frankford R. R. (*See Del., Md. & Va.*)
Bridgton & Saco River R. R. 2 g. 16 m. 2 lo. 19 c.
Wm. F. Perry, *Gen. Supt* ...... Bridgton, Me.
M. M. Caswell, *M. M. & Pur. Agt.* Bridgton, Me.
Brighthope Ry. 3 g. 37 m. 4 lo. 193 cars.
Jas. R. Worth, *Supt* .... Richmond, Va.
P. M. Buckingham, *Pur. Agt* Richmond, Va.
A. Gary, *Supt. Way & Works.* Winterpock, Va.
Robt. Kredell, *M. M.* .... Chester, Va.
Brooklyn, Bath & Coney Island R. R.
4-8½ g. 7 m. 8 lo. 36 cars.
Geo. A. Gunther, *Gen. Man.* .. Brooklyn, N. Y.
Aug. Wolff, *M. M.* .... Brooklyn, N. Y.
Brooklyn, Flatbush & Coney Island Ry.
4-8½ g. 7 m. 7 lo. 54 c.
J. L. Morrow, *Supt. & P. A.* .. Brooklyn, N. Y.
Wm. Finley, *M. M.* .... Brooklyn, N. Y.
Brooklyn & Rockaway Beach R. R.
4-8½ g. 3 m. 2 lo. 18 cars.
Wm. Warner, *Supt.* ..... East New York, N. Y.
Brunswick & Western R. R. 5 g. 172 m. 13 lo. 170 c.
H. S. Morse, *Gen. Man. & P. A.* .. Brunswick, Ga.
C. R. Will, *Asst. Gen. Man* ..... Brunswick, Ga.
W. R. Kline, *M. M.* .... Brunswick, Ga.
Buff., N. Y. & Phil. R. R. 3 & 4-8½ g. 655 m. 120 l. 6,339 c.
Geo. S. Gatchell, *Gen. Supt* ...... Buffalo, N. Y.
W. W. Halsey, *Asst. to G. Supt.* .. Buffalo, N. Y.
Allen Vail, *M. M.* .... Buffalo, N. Y.
Buff. Div.: Henry Dwyer, *Supt* .... Buffalo, N. Y.
Roch. Div.: J. R. Watson, *Supt* ..... Olean, N. Y.
Pitts. Div.: E. H. Witter, *Supt* ..... Oil City, Pa.
H. J. Bookhammer, *M. M.* .... Oil City, Pa.
C. E. Turner, *M. M.* .... Olean, N. Y.
Burlington, Cedar Rapids & Northern Ry.
4-8½ g. 989 m. 96 lo. 4,206 cars.
C. J. Ives, *Pres & Gen. Supt.* Cedar Rapids, Ia.
Robt. Williams, *Gen. Supt* .... Cedar Rapids, Ia.
T. Stickney, *Pur. Agt* .... Cedar Rapids, Ia.
R. W. Bushnell, *M. M. & C. B.* Cedar Rapids, Ia.
Burlington & Lamoille R. R. 4-8½ g. 35 m. 4 lo. 64 c.
G. L. Linsley, *Gen. Man. & Supt.* Burlington, Vt.
F. G. Brownell, *M. M.* .... Burlington, Vt.
Burlington & Mo. Riv. R. R. (in Neb.) (*See C. B. & Q.*)
Burlington & North-West'n Ry. 3 g. 38 m. 3 lo. 97 c.
Burlington & Western R. R. 3 g. 15 m. 38 c.
E. S. Edger, *Supt* .... Burlington, Ia.
Burlington & Ohio River R. R. 4-8½ g.
R. Tanner, *Pur. Agt* .... Chicago, Ill.

C

California Northern R. R. 4-8½ g. 26 m. 2 lo. 17 c.
Andrew J. Binney, *Gen. Man* Marysville, Cal.
California Southern R. R. 4-8½ g. 127 m. 13 lo. 301 c.
J. N. Victor, *Supt* .... National City, Cal.
J. M. Keith, *M. M.* .... National City, Cal.
Cambridge & Seaford. (*See Penna. R. R.; (4) Div.*)
Camden Atlantic R. R. (*See Penna. R. R.; (2) Div.*)
Canada Southern Ry. (*See Mich. Cen.; (2) Div.*)
Canada Atlantic Ry. 4-8½ g. 135 m.
D. C. Linsley, *Man* .... Ottawa, Ont.
M. Donaldson, *M. M.* .... Ottawa, Ont.
Canadian Pacific R. R. 4-8½ g. 1,742 m. 118 l. 2,726 c.
W. C. Van Horne, *Gen. Man* .... Montreal, Can.
Francis R. F. Brown, *Mech. Supt.* Montreal, Can.
T. G. Shaughnessy, *Pur. Agt* ... Montreal, Can.
E. Div.: Archer Baker, *Gen. Supt* Montreal, Can.
W. Div.: J. M. Egan, *Gen. Supt* .. Winnipeg, Man.
Ontario Div.: W. White, *Gen. Supt* Montreal, Can.
Cape F'r & Yadkin Val. R. R. 4-8½ g. 112 m. 7 lo. 60 c.
J. S. Morrison, *Gen. Supt* .... Fayetteville, N. C.
Isaac W. Clark, *M. M. & C. B.* Fayetteville, N. C.
Cape Girardeau Southwestern Ry.
4-8½ g. 52 m. 3 lo. 51 cars.
Louis Houck, *Gen. Man* .. Cape Girardeau, Mo.
W. A. Penney, *Supt* ..... Cape Girardeau, Mo.
D. L. Meyers, *Pur. Agt* ... Cape Girardeau, Mo.
Fred Glover, *M. M.* .... Cape Girardeau, Mo.
Carolina Central R. R. (*See Ral. & Aug.*)
Carillon & Grenville Ry. 5-6 g. 13 m.
R. W. Shepard, *Pres* .... Montreal, Can.
Carson & Colorado R. R. (*See Va. & Truckee*).
Catasauqua & Fogelsville. 4-8½ g. 25 m. 6 lo. 581 c.
C. W. Chapman, *Supt. & P. A.* Catasauqua, Pa.
J. Thomas, *M. M.* .... Hokendauqua, Pa.
Chas. J. Holbach, *M. C. B.* .... Catasauqua, Pa.
Catskill Mountain R. R. 3 g. 16 m. 2 lo. 26 cars.
Charles A. Beach, *Supt* .... Catskill, N. Y.
Cazenovia, Canastota & De Ruyter. (*See U., I. & E.*)
Central and South-Western Railroads (Ga.).
5 g. 1,115 m. 145 lo. 2,008 cars.
W. G. Raoul, *Pres* .... Savannah, Ga.
Wm. Rogers, *Gen. Supt* .... Savannah, Ga.
C. H. Carson, *Pur. Agt* .... Savannah, Ga.
Cen. Div.: D. D. Arden, *M. M.* ...... Savannah, Ga.
T. F. Warwick, *M. M.* .... Augusta, Ga.
F. Devine, *M. C. B.* .... Savannah, Ga.
So.-West'n Div.: T. D. Kline, *Supt* .... Macon, Ga.
D. M. Gugel, *M. M.* .... Macon, Ga.
James A. Knight, *M. C. B.* .... Macon, Ga.
Central R. R. of N. J. (*See Phil. & Read.; N. J. Cen. Div.*)
Central R. R. of S. C. (*See Wil. & Wel.*)
Central American & Pacific Ry. 3 g. 67 m. 1 lo. 11 c.
W. C. Fitzsimmons, *Gen. Supt.* Escuintla, Guat.
Central Branch Union Pac. (*See Mo. Pac.; (3) Div.*)
Central Iowa Ry. 4-8½ g. 412 m. 50 lo. 2,313 cars.
E. L. Dudley, *Supt* .... Marshalltown, Ia.
J. G. Johnston, *Asst. Supt* ... Marshalltown, Ia.
D. D. Phelps, *Asst. Supt* .... Monmouth, Ill.
C. H. Ackert, *Pur. Agt* .... Marshalltown, Ia.
John Player, *M. M. & M. C. B.* Marshalltown, Ia.
Central Ontario Ry. 4-8½ g. 33 m. 4 lo. 66 cars.
J. B. McMullen, *Gen. Man* .... Picton, Ont.
James Falconar, *M. M.* .... Trenton, Ont.
Central Pac. R. R. 4-8½ g. 4,303 m. 382 lo. 11,260 c.
A. N. Towne, *Gen. Man* ... San Francisco, Cal.
J. A. Fillmore, *Gen. Supt.* .. San Francisco, Cal.
R. H. Pratt, *A. G. Supt* .... San Francisco, Cal.
J. R. Watson, *Gen. Pur. Agt* . Sacramento, Cal.
A. J. Stevens, *Gen. M. M.* ..... Sacramento, Cal.
W. McKenzie, *Asst. G. M. M.* . Sacramento, Cal.
Benj. Welch, *Gen. M. C. B.* ... Sacramento, Cal.
G. J. Turner, *Asst. G. M. C. B.* Sacramento, Cal.
Western: Visalia & Tulare Divs. and Northern Ry.
A. D. Wilder, *Supt* .... W. Oakland, Cal.
G. D. Welch, *M. M.* (W. Div.) W. Oakland, Cal.
W. B. Ludlow, *M. C. B.* (W. Div.) do.
S. Johnson, *M. M.* (T. Div.) ...... Tulare, Cal.
D. Rutherford, *M. M.* (N. Rd.) S. Vallejo, Cal.
Sacramento; Oregon Divs.; and Cal. Pac. R. R.
J. B. Wright, *Supt* .... Sacramento, Cal.
M. W. Cooley, *M. M.* (*S. Div.*) Sacramento, Cal.
Truckee Div.: J. H. Whited, *Supt.* Wadsworth, Nev.
Geo. Gregg, *M. M.* .... Wadsworth, Nev.
Wm. McPherson, *F. Car Sh.* .. Wadsworth, Nev.
Humb't Div.: G. W. Coddington, *Supt.* Carlin, Nev.
W. F. Smith, *M. M.* .... Carlin, Nev.
J. C. Doughty, *For. Car Sh.* .... Carlin, Nev.
Salt Lake Div.: A. G. Fell, *Supt* ..... Ogden, Utah.
James Lamb, *M. M.* .... Terrace, Utah.
A. Sherburne, *For. Car Sh.* .... Ogden, Utah.
Colorado Div.: E. F. Hewitt, *Supt* ... Needles, Cal.
St. & Cop. R. R.: R. L. Myrick, *Supt.* Stockton, Cal.
Los Angeles; and Yuma Divs. (So. Pac.):
E. E. Hewitt, *Asst. Supt* .... Los Angeles, Cal.
James Velsir, *M. M.* .... Los Angeles, Cal.
T. T. Gilieland, *For. Car Sh.* Los Angeles, Cal.
Arizona Divs. (So. Pac.):
J. A. Muir, *Asst. Supt* .... Tucson, Ariz.
W. F. Smith, *M. M.* .... Tucson, Ariz.
Rio Grande (S. Pac.) & El Paso (G. H. & S. A.) Divs.:
C. B. Seymour, *Supt* .... El Paso, Texas.
J. L. Bonner, *M. M.* .... El Paso, Texas.
H. C. Standish, *For. Sh.* .... El Paso, Texas.
Galveston, Harrisburg & San Antonio System.
E. G. Thompson, *Supt* ..... Houston, Tex.
San Anto. Div.: W. G. Van Vleck, *Supt.*. and
J. J. Ryan, *M. M.* .... San Antonio, Tex.
D. T. Davis, *Supt. Car Shops.* Harrisburg, Tex.
Louisiana Div.: W. Irwin, *Supt* ..... Houston, Tex.
D. C. Smith, *M. M.* .... Houston, Tex.
El Paso Div.: E. B. Seymour, *Supt.*. El Paso, Tex.
J. L. Bonner, *M. M.* .... El Paso, Tex.
Central Texas & N'w'n R. R. (*See Hous. & Tex. Cen.*)
Central Vermont R. R. 4-8½ g. 864 m. 185 lo. 2,789 c.
J. W. Hobart, *Gen. Man* .... St. Albans, Vt.
J. M. Foss, *Gen. Supt* .... St. Albans, Vt.
W. J. Robertson, *Supt. M. P.* ... St. Albans, Vt.
No. Div.: I. B. Futvoye, *Supt* ..... St. Johns, P. Q.
Rut. Div.: J. Burdett, *Supt* .... Rutland, Vt.
N. L. Davis, *M. M. & C. B.* .... Rutland, Vt.
Brattleboro & Whitehall R. R., and
Brat. Div.: E. F. Brooks, *Supt* .. Brattleboro, Vt.
New London N'o'n R. R. 143 m. 22 lo. 303 c.
C. F. Spaulding, *Supt. & P. A.* New London, Ct.
A. J. Robertson, *M. M.* .... New London, Ct.
S. O. Banks, *M. C. B.* .... New London, Ct.
Chagrin Falls & Southern R. R. 3 g. 6 m. 1 lo. 12 c.
W. Hutchings, *Gen. Man* ..... Chagrin Falls, O.
J. W. Williams, *Gen. Supt* .... Chagrin Falls, O.
Charleston & Savannah Ry. 5 g. 115 m. 15 lo. 200 c.
H. S. Haines, *Gen. Man* .... Savannah, Ga.
C. S. Gadsden, *Gen. Supt* ...... Charleston, S. C.
H. A. Ulmo, *M. M.* .... Savannah, Ga.
Charlotte, Columbia & Augusta R. R. (*See Rich. & D.*)
Chateaugay R. R. 3 g. 34 m. 8 lo. 380 cars.
A. L. Inman, *Gen. Man* ..... Plattsburg, N. Y.
J. M. Davies, *Supt* ..... Lyon Mountain, N. Y.
M. L. French, *Asst. Supt* .... Plattsburg, N. Y.
Chatham Ry. 4-8½ g. 9 m.
J. B. Snowball, *Man* .... Chatham, N. B.
Chattaroi Ry. 4-8½ g. 51 miles 11 loco. 483 cars.
F. H. Oliphant, *Gen. Man. & P. A.* Ashland, Ky.
J. R. Martin, *M. M.* .... Ashland, Ky.
Joseph P. Burleigh, *M. C. B.* ..... Ashland, Ky.
Cheraw & Chester R. R. (*See Rich. & Dan.; (2) Div.*)
Cheraw & Darlington R. R. (*See Wil. & Wel.*)
Cheraw & Salisbury R. R. (*See Wil. & Wel.*)
Cherokee R. R. (*See East & West.*)
Cherry Valley R. R. 4-8½ g. 6 m. 3 lo. 6 cars.
E. T. Herndon, *Supt* .... Midland, Mo.
Chesapeake, Ohio & South-Western.
4-9 g. 398 m. 62 lo. 1,345 c.
Jas. L. Frazier, *Supt* .... Louisville, Ky.
H. E. Huntington, *Pur. Agt* .... Louisville, Ky.
J. A. Dew, *Mast. Trans* .... Paducah, Ky.
R. H. Briggs, *Supt. M. P.* .... Paducah, Ky.
D. L. Weaver, *M. M.* .... Elizabethtown, Ky.
Jno. Fitzgerald, *M. M.* .... Paducah, Ky.
Chesapeake & Ohio Ry. 4-8½ g. 642 m. 169 l. 5,126 c.
C. W. Smith, *Gen. Man* .... Richmond, Va.
D. A. Sweet, *Asst. to Gen. Man.* Richmond, Va.
A. S. Emmons, *Pur. Agt* .... Richmond, Va.
T. L. Chapman, *Supt. M. P.* ... Richmond, Va.
Eastern Div.: A. H. Wood, *Supt.*. Richmond, Va.
J. N. King, *M. C. B.* .... Richmond, Va.
J. B. Pierce, *M. M.* .... Richmond, Va.
Hunt. Div.: W. B. Ryder, *Supt* .. Hinton, W. Va.
W. H. Thomas, *M. M.* ... Huntington, W. Va.
H. C. Bassinger, *M. C. B.* Huntington, W. Va.
Lex. Div.: J. D. Yarrington, *Supt.*. Lexington, Ky.
S. R. Tuggle, *M. M.* .... Lexington, Ky.
K. C. Div.: G. W. Bender, *Supt* .. Covington, Ky.
W. T. Smith, *M. M.* .... Covington, Ky.
Cheshire R. R. 4-8½ g. 80 m. 31 lo. 531 cars.
R. Stewart, *Gen. Man* .... Keene, N. H.
H. H. Stone, *Pur. Agt* .... Keene, N. H.
F. A. Perry, *M. M.* .... Keene, N. H.
A. E. Howard, *M. C. B.* .... Keene, N. H.
Chester & Lenoir Ry. (*See Rich. & Dan.; (3) Div.*)
Chicago, Bur. & Kan. City Ry. (*See C. B. & Q.*)
Chicago, Burlington & Quincy R. R.
4-8½ g. 3,608 m. 545 lo. 21,012 cars.
T. J. Potter, *Gen. Man* .... Chicago, Ill.
(1) C., B. & Q., East of Mo. Riv.
H. B. Stone, *Asst. Gen. Man* ...... Chicago, Ill.
Wm. Irving, *Gen. Pur. Agt* .... Chicago, Ill.
G. W. Rhodes, *Supt. M. P.* .... Aurora, Ill.
Wm. Forsyth, *Mech. Eng* .... Aurora, Ill.
Ill. Divs.: J. D. Besler, *Supt* .... Galesburg, Ill.
Chi. Div.: Geo. Alexander, *Supt* ... Aurora, Ill.
L. E. Johnson, *M. M.* .... Aurora, Ill.
Galesburg Div.: F. C. Rice, *Supt* Galesburg, Ill.
Robert Colville, *M. M.* .... Galesburg, Ill.
St. L. Div.: W. C. Brown, *Supt.* Beardstown, Ill.
A. Forsyth, *M. M.* .... Beardstown, Ill.
Ia. & Mo. Divs.: W. F. Merrill, *Supt* Burlington, Ia.
East. Div.: O. E. Stewart, *Supt.* Burlington, Ia.
Joel West, *M. M.* .... Burlington, Ia.
Mid. Div.: J. B. Maxon, *Supt* .... Ottumwa, Ia.
West'n Div.: J. H. Duggin, *Supt* .... Creston, Ia.
C. W. Eckerson, *M. M.* .... Creston, Ia.
Chi., B. & Kan. C'y and St. L., Keo. & No.-W'n Rys.
Robt. Law, *Gen. Supt* .... Keokuk, Ia.
W. H. Bartlett, *M. M.* .... Burlington, Ia.
(2) C. B. & Q., West of Mo. Riv.
G. W. Holdrege, *Asst. Gen. Man.* Omaha, Neb.
C. M. Wead, *Supply Agt* .... Omaha, Neb.
D. Hawksworth, *M. M.* .... Plattsmouth, Neb.
C. M. Wead, *Storek'pr* .... Plattsmouth, Neb.
Bur. & Mo. Riv. & Neb. Ry. Divs.:
T. E. Calvert, *Gen Supt* .... Lincoln, Neb.
D. E. Thompson, *Supt* .... Lincoln, Neb.
E. Bignell, *M. M.* .... Lincoln, Neb.
R. V. Div.: A. Campbell, *Supt* ..... McCook, Neb.
A. & N. Div.: J. McConniff, *Supt* .. Lincoln, Neb.
Chicago, Fairchild & Eau Claire R. R.
4-8½ g. 22 m. 4 lo. 28 cars.
N. C. Foster, *Gen. Man* .... Fairchild, Wis.
C. I. Wickersham, *Pur. Agt* ..... Chicago, Ill.
Chicago, Iowa & Dakota Ry. 4-8½ g. 26 m.
John Porter, *Gen Man* .... Eldora, Ia.
Chicago, Milwaukee & St. Paul R. R.
4-8½ g. 5,201 m. 626 lo. 19,018 cars.
Gen. Man .... Milwaukee, Wis.
R. Miller, *Asst. Gen. Man* ... Milwaukee, Wis.
J. T. Clark, *Gen. Supt* .... Milwaukee, Wis.
A. J. Earling, *Asst. Gen. Supt.* Milwaukee, Wis.
J. T. Crocker, *Pur. Agt* .... Milwaukee, Wis.
J. M. Lowry, *Gen. M. M.* .... Milwaukee, Wis.
E. Fairbairn, *M. M.* .... Milwaukee, Wis.
John Baillie, *Supt. Car Dept* ... Milwaukee, Wis.
W. E. Kittridge, *M. C. B.* ..... Milwaukee, Wis.
(1) C. & M. and C. & C. B. in Ill.:
G. O. Clinton, *Supt* .... Chicago, Ill.
Ch. & C. B. in Ia.:
R. B. Campbell, *Supt* .... Marion, Wis.
La C. & Wis. Val. Divs.:
W. G. Collins, *Supt* .... Milwaukee, Wis.
P. du C. & M. Pt. Divs.:
S. J. Collins, *Supt* .... Milwaukee, Wis.
(2) C. H. Prior, *Asst. Gen. Supt.* Minneapolis, Minn.
H. & D. Div.: W. M. Kellie, *Supt* do.
J. O. Pattie, *M. M.* ...... Minneapolis, Minn.
Ia. & Minn. Div.: H. R. Williams, *Supt.* do.
S. Minn. Div.: F. D. Underwood, *Supt.* Lacrosse, Wis.
Riv. & Dub. Divs.: C. W. Case, *Supt.* Dubuque, Ia.
S. Charnley, *M. M.* .... Dubuque, Ia.
Ia. & Da. Div.: G. W. Sanborn, *Supt.* Mason City, Ia.
S. Cy. & Da. Div.: W. J. Underwood, *Supt.* Sioux C'y, Ia.
F. H. Moulton, *M. M.* .... Yankton, Dak.
J. M. Horan, *For.* .... Yankton, Dak.
(3) D. A. Olin, *Asst. Gen. Supt* .... Racine, Wis.
R. & S. W. Divs.: D. L. Bush, *Supt* .. Racine, Wis.
John Taylor, *M. M.* .... Racine, Wis.
(4) Northern Div.: L. B. Rock, *Supt.* Milwaukee, Wis.
Wm. E. Kittredge, *M. C. B.* .. Milwaukee, Wis.
Chicago, Rock Island & Pac. Ry.
4-8½ g. 1,381 m. 309 lo. 8,367 cars.
R. R. Cable, *Pres. & Gen. Man* ... Chicago, Ill.
A. Kimball, *V. P. & Gen. Supt* ..... Chicago, Ill.
H. F. Royce, *Asst. G. Supt* ...... Davenport, Ia.
F. A. Marsh, *Pur. Agt* .... Chicago, Ill.
T. B. Twombly, *Gen. M. M.* .... Chicago, Ill.
B. K. Verbryck, *Gen. M. C. B.* ..... Chicago, Ill.
Ill. Div.: R. H. Chamberlin, *Supt* ..... Chicago, Ill.
R. Biester, *M. M.* .... Chicago, Ill.
Sam'l Pullman, *M. C. B.* .... Chicago, Ill.
Ia. Divs.: Jno. Given, *Supt* .... Des Moines, Ia.
J. G. Crockett, *M. M.* .... Stuart, Ia.
Jas. E. Morrill, *M. M.* .... Davenport, Ia.
Chas. M. Leonard, *M. C. B.* ...... Davenport, Ia.
K. & Des. M. Div.: Jno. Given, *Supt.* Des Moines, Ia.
S. W. Wakefield, *M. M.* .... Keokuk, Ia.
Henry Kummer, *M. C. B.* .... Keokuk, Ia.
So.-Wn. Div.: G. F. Walker, *Supt* .... Trenton, Mo.
R. O. Carscadin, *M. M.* .... Trenton, Mo.
Chas. R. Best, *M. C. B.* .... Trenton, Mo.
Chicago, Saginaw & Canada R. R. (*See Det., L. & N.*)
Chicago, St. Louis & New Orleans R. R. (*See Ill. Cen.*)
Chicago, St. Louis & Pittsburgh R. R.
4-9 g. 635 m. 202 lo. 3,510 cars.
James McCrea, *Manager* .... Columbus, O.
Wm. Mullins, *Gen. Pur. Agt* ... Pittsburgh, Pa.
Edward B. Wall, *Supt. M. P.* ... Columbus, O.
1, 3 & 5 Divs.: J. F. Miller, *Supt.* Richmond, Ind.
Robert Curtis, *M. M.* .... Columbus, O.
J. L. Copeland, *G. F. Car Shops* Columbus, O.
Wm. Swanston, *M. M.* ..... Indianapolis, Ind.
W. C. Arp, *Gen. For.* ...... Indianapolis, Ind.
2 & 4 Divs.: Chas. Watts, *Supt.* Logansport, Ind.
W. W. Reynolds, *M. M.* ..... Logansport, Ind.
Chas. H. Starr, *G. F. C. Shops*, Logansport, Ind.
Chicago, St. Louis & W'n. R. R. 4-8½ g. 152 m. 11 lo. 1,799c.
F. E. Hinckley, *Gen. Man* .... Chicago, Ill.
B. T. Lewis, *Pur. Agt* .... Chicago, Ill.
A. H. Crocker, *Supt* .... Streator, Ill.
J. N. Chilson, *M. C. B.* .... Streator, Ill.
Chicago, St. Paul, Minneapolis & Omaha Ry.
4-8½ g. 1,301 m. 181 lo. 5,459 cars.
J. M. Whitman, *Gen. Supt* ...... St. Paul, Minn.
W. H. S. Wright, *Pur. Agt* ...... St. Paul, Minn.
Matt. Ellis, *M. M.* .... St. Paul, Minn.
J. J. Ellis, *Asst. M. M.* .... St. Paul, Minn.
H. L. Preston, *M. C. B.* .... Hudson, Wis.
Ea. & No. Div.: A. A. Hobart, *Supt.* St. Paul, Minn.
St. Paul and Sioux City Div.:
H. Spencer, *Supt* .... St. James, Minn.
H. C. Anderson, *Asst. M.* ...... Sioux Cy., Ia.
Neb. Div.: Jas. McCabe, *Supt* .... Omaha, Neb.
Chic., Tex. & Mexican Cent. Ry. (*See Gulf, C. & S. F.*)
Chicago & Alton R. R. 4-8½ g. 849 m. 213 lo. 6,168 c.
C. H. Chappell, *Gen. Man* .... Chicago, Ill.
T. M. Bates, *Supt. of Trans* ... Bloomington, Ill.
A. V. Hartwell, *Pur. Agt* .... Chicago, Ill.
Wm. Wilson, *Supt. of Mach.* Bloomington, Ill.
Jos. Townsend, *G. For. Car Dept.* do.
Chi. Div.: A. M. Richards, *Sup.* Bloomington, Ill.
St. L. & K. C. Div.: S. D. Reeves, *Supt.* Roodhouse, Ill.
L. H. Miller, *M. M.* .... Slater, Mo.
Chicago & Atlantic Ry. 4-8½ g. 269 m.
F. Broughton, *Gen. Man* .... Chicago, Ill.
J. H. Parsons, *Supt* .... Chicago, Ill.
C. J. Domville, *M. M.* .... Huntington, Ind.
Chi. & East'n Ill. 4-8½ g. 252 m. 56 lo. 3,870 cars.
O. S. Lyford, *Gen. Supt* .... Chicago, Ill.
D. R. Patterson, *Pur. Agt* .... Chicago, Ill.
P. W. Drew, *M. Trans* .... Chicago, Ill.
Allen Cooke, *M. M.* .... Danville, Ill.
Chicago & Grand Trunk Ry. (*See Grand Trunk.*)
Chicago & Great Southern Ry.
4-8½ g. 124 m. 4 lo. 122 c.
Henry Crawford, *Gen. Man* .... Chicago, Ill.
H. Crawford, Jr., *Supt* .... Chicago, Ill.
Chicago & Iowa R. R. 4-8½ g. 104 m. 18 lo. 237 cars.
T. J. Potter, *Gen. Man* .... Chicago, Ill.
W. H. Holcomb, *Gen. Supt* .... Rochelle, Ill.
H. S. Bryan, *M. M.* .... Aurora, Ill.
Chicago & Northwestern Ry.
4-8½ g. 3,761 m. 637 lo. 21,000 cars.
Marvin Hughitt, *2d V. Pres. & G. M.* Chicago, Ill.
C. C. Wheeler, *Gen. Supt* .... Chicago, Ill.
Ass't Gen. Supt .... Chicago, Ill.
R. W. Hamer, *Pur. Agt* .... Chicago, Ill.
Geo. W. Tilton, *Supt. M. P. & M.*; and
Wm. Campbell, *A. Supt. M. P. & M.* Chicago, Ill.
Wis. and Mil. Divs. & Sheboygan & W'n Ry.:
Ed. J. Cuyler, *Supt* .... Chicago, Ill.
Gal. Div.: Chas. Murray, *Supt* .... Chicago, Ill.
Pen'a Div.: W. F. Fitch, *Supt* ...... Escanaba, Mich.
J. Symons, *M. M.* .... Escanaba, Mich.
Mad. Div.: C. A. Swineford, *Supt.* Baraboo, Wis.
Minn. & Dak. Divs.: S. Sanborn, *Asst. Gen. Supt.* and W. A. Scott, *M. M.* .... Winona, Minn.
Dak. Cen. Ry.: J. S. Oliver, *Supt* ...... Huron, Dak.
Ia. Div.: H. G. Burt, *Supt* .... Boone, Ia.
Geo. W. Lowe, *M. M.* .... Clinton, Ia.
No. Ia. Div.: M. Hopkins, *Supt* ... Eagle Grove, Ia.
Win. & St. P. Div.:
W. P. Coscrave, *Supt* .... Winona, Minn.
Chicago & West Michigan:
4-8½ g. 409 m. 47 lo. 1,629 cars.
J. B. Mulliken, *V. P. & G. Man.* Muskegon, Mich.
J. K. V. Agnew, *Gen. Supt.* Grand Rapids, Mich.
Allen Bourne, *Pur. Agt* .... Detroit, Mich.
W. F. N. Davis, *M. M.* .... Muskegon, Mich.
Chicago & West'n Ind. R. R. 4-8½ g. 50 m. 12 lo. 150 c.
James D. Carson, *Gen. Man* .... Chicago, Ill.
R. W. Johnson, *M. M.* .... Chicago, Ill.
Cincinnati, Columbus & Hocking Val. Ry.
4-9 g. 35 m. 2 lo. 77 cars.
D. P. Hyatt, *Gen Man* .... Dayton, O.
Cin., Georgetown & Portsmouth. 3 g. 35 m. 3 lo. 45 c.
M. Simmons, *Supt* .... Cincinnati, O.
F. Enler, *M. M.* .... Cincinnati, O.
Cincinnati & Green River Ry. 5 g. 17 m. 2 lo. 50 c.

G. B. Harper, Supt .... Yosemite, Ky.
Matt. Horton, M. M .... Yosemite, Ky.
Cin., Hamilton & Dayton R.R. 4-9 g. 352 m. 92 l. 2,032 c.
W. F. Stark, Asst. Supt .... Cincinnati, O.
John Black, Gen. M. M .... Lima, O.
W. H. H. Allison, M. C. B .... Cincinnati, O.
Cincinnati, Hamilton & Indianapolis R. R.
4-8½ g. 98 m.
C. J. Hepburn, Supt .... Cincinnati, O.
Day. & Mich. Div.:
Cincinnati, Indianapolis, St. Louis & Chicago Ry.
4-8½ g. 384 m. 71 lo. 3,279 cars.
J. W. Sherwood, Supt .... Indianapolis, Ind.
Geo. Tozzer, Pur. Agt .... Cincinnati, O.
J. S. Patterson, M. of Mach. & M. C. B. Cincin., O.
Cincinnati, New Orleans & Texas Pacific Ry. Co.
5 g. 846 m. 123 lo. 3,464 cars.
John Scott, Gen. Man .... Cincinnati, O.
Richard Carroll, Gen. Supt .... Cincinnati, O.
R. W. Healey, Gen. Pur. Agt .... Cincinnati, O.
James Meehan, S. M. P. & M .... Cincinnati, O.
Cin. So. Div.: W. W. Wells, Supt. Somerset, Ky.
J. J. Tomlinson, Asst. S. M. P. Ludlow, Ky.
John Richardson, M. C. B .... Cincinnati, O.
A. Thomson, M. M .... Chattanooga, Tenn.
Ala. Gr. S'n Div.: D. McLaren, Supt., and
George Manuell, M. M ...... Chattanooga, Tenn.
J. M. Kelly, M. C. B .... Chattanooga, Tenn.
V. & M. Div.: E. F. Raworth, Supt., and
M. M .... Vicksburg, Miss.
V.S. & P. Div.: F. Y. Dabney, Supt. Monroe, La.
W. Bell Smith, M. M. & C. B ...... Monroe, La.
New Orleans & North-Eastern R. R.
Edmund L. Tyler, Supt ...... New Orleans, La.
I. W. Fowle, M. M .... Meridan, Miss.
Cincinnati Northern Ry.
Geo. L. Barringer, Gen. Man ...... Cincinnati, O.
Cincinnati, Richmond & Chicago R. R. 4-9 g. 37 m.
C. J. Hepburn, Supt .... Cincinnati, O.
Cincinnati, Selma & Mobile R.R. 5 g. 71 m. 6 lo. 148 c.
A. McCollister, Supt .... Selma, Ala.
H. L. Wright, Pur. Agt .... Selma, Ala.
J. M. Levis, M. M .... Marion, Ala.
Cincinnati, Van Wert & Michigan R. R.
4-9 g. 81 m. 7 lo. 168 cars.
E. Garrison, Gen. Man .... Van Wert, O.
D. R. Ennis, Supt. & P. A .... Van Wert, O.
H. H. Garr, M. M. & M. C. B .... Van Wert, O.
Cin., Wabash & Mich. Ry. 4-8½ g. 165 m. 11 lo. 402 c.
Norman Beckley, Gen. Man. & P. A. Elkhart, Ind.
O. W. Lamport, Supt .... Wabash, Ind.
S. B. Tinker, M. M. & M. C. B .... Wabash, Ind.
Cin., Wash. & Balt. 4-8½ g. 312 m. 65 lo. 1,880 cars.
Jas. H. Stewart, Gen. Man .... Cincinnati, O.
Edw. Evans, M. M .... Chillicothe, O.
T. G. Duncan, Supt. Car Dept .... Zaleski, O.
Cincinnati, Wheeling & New York R. R. 4-8½ g. 13 m.
T. M. Atkinson, Gen. Man .... Batesville, O.
Cincinnati & Eastern Ry. 3 g. 68 m. 6 lo. 133 cars.
4-8½ g. 50 m. 3 lo.
S. Woodward, Rec .... Cincinnati, O.
G. H. Wilber, Gen. Sup. & Pur. Agt. Cincinnati, O.
A. Donaldson, M. M .... Newtown, O.
Cincinnati & South-Eastern Ry. 4-8½ g. 18 m.
John V. Patton, Gen. Man .... Newport, Ky.
Clarksburg, Weston & Glenville R. R.
3 g. 26 m. 3 lo. 45 cars.
A. H. Kunst, Pres. & Gen. Man. Weston, W. Va.
Sam. A. Steel, M. M .... Weston, W. Va.
F. Dillie, M. C. B .... Nottingham, O.
Cleveland, Columbus, Cincinnati & Indiana and Indianapolis & St. Louis Rys. and Dayton & Union R. R. 4-8½ g. 785 m. 246 lo. 7,988 cars.
E. B. Thomas, Gen. Man .... Cleveland, O.
J. L. Yale, Pur. Agt .... Cleveland, O.
W. F. Turreff, Gen. M. M .... Cleveland, O.
Col. & Cin. Div.: Robt. Blee, Supt. Cleveland, O.
Wm. Garstang, M. M .... Cleveland, O.
A. G. Steinbrenner, G. For. Car Dept ...... do.
Ind'n'lis Div.: John O. Ewan, Supt. Ind'polis, Ind.
T. W. Ranson, M. M .... Brightwood, Ind.
N. Mark, G. For. Car Dept. Brightwood, Ind.
Ind. & St L Ry.: Tho. Burrows, Supt. St. Louis, Mo.
T. W. Ranson, M. M. & C. B. Brightwood, Ind.
Day. & Un. Rd.: J. H. Barrett, Supt ...... Dayton, O.
H. S. Gordon, For. M. Shops .... Dayton, O.
Clevel'd, Delphos & St. Louis R.R. 3 g. 56 m. 3 lo. 39 c.
I. H. Burgoon, Gen. Man .... Delphos, O.
B. F. Marshall, M. M .... Delphos, O.
Cleveland, Indiana & St. Louis R. R.
4-8½ g. 19 m. 2 lo. 20 cars.
J. A. Larned, Rec. & Supt .... Anderson, Ind.
Cleveland, Mt. Vernon & Delaware R. R.
4-9 g. 144 m. 24 lo. 886 c.
N. Monsarrat, Gen. Supt .... Akron, O.
G. M. Taylor, M. M. & C. B .... Mt. Vernon, O.
Cleve., Youngstown & Pittsb'g R.R. 3 g. 39 m. 3 lo. 138 c.
D. T. Lumley, Gen. Supt .... Alliance, O.
C. H. Dorman, M. M. & M. C. B .... Alliance, O.
Cleveland, Lorain & Wheeling Ry.
4-8½ g. 158 m. 31 lo. 1,878 cars.
Oscar Townsend, Gen. Man .... Cleveland, O.
Wm. Thornburg, Supt .... Lorain, O.
A. Warburton, Gen. For .... Lorain, O.
Cleve. & Marietta R. R. (See Wheel. & Lake Erie.)
Cleveland & Pittsburgh. (See Penna. Co.; (4) Div.)
Clifton & Port Hudson R. R. 4-8½ g. 22 m. 3 lo. 12 c.
John Bradley, Supt .... New Orleans, La.
W. F. Lockwood, M. M .... Clinton, La.
E. D. Anderson, M. M .... Vicksburg, Miss.
Clove Branch R. R. 4-8½ g. 4 m. 1 lo. 61 cars.
C. L. Kimball, Supt .... Matteawan, N. Y.
W. G. Vanbuskirk, M. M ...... Dutchess Jc., N. Y.
Coburg, Peterborough & Marmora Ry.
5-6 g. 47 m. 5 lo. 255 cars.
Jas. R. Barker, Gen. Supt .... Cobourg, Ont.
Jas. Clark, M. M .... Cobourg, Ont.
John Tinney, M. C. B .... Cobourg, Ont.
Colorado Central R. R. (See Un. Pac.; (4) Div.)
Columbia & Greenville R. R. (See Rich. & D.; (3) Div.)
Columbia & Puget Sound R.R. 3 g. 21 m. 7 lo. 114 c.
J. L. Howard, Gen. Supt. San Francisco, Cal.
Columbus, Hocking Valley & Toledo Ry.
4-9 g. 324 m. 90 lo. 7,353 cars.
G. R. Carr, Gen. Supt .... Columbus, O.
W. M. Greene, Pur. Agt .... Columbus, O.
Ira G. Hutchins, M. M .... Columbus, O.
A. W. Dolby, M. C. B .... Columbus, O.
Tol. Div.: M. T. Seymour, Supt ...... Columbus, O.
Hock. V. Div.: M. P. L. Booth, Supt. Columbus, O.
Ohio Riv. Div.: C. D. Norris, Supt ...... Logan, O.
Columbus & Eastern R. R. In progress.
J. E. Redfield, Pres .... Columbus, Ohio.
Columbus & Maysville Ry. (See Cin. & East.)
Columbus & Rome R. R. 3 g. 33 m. 3 lo. 30 cars.
M. E. Gray, Supt .... Columbus, Ga.
Columbus & Western Ry. 5 g. 89 m. 6 lo. 53 cars.
E. A. Flewellen, Gen. Man .... Columbus, Ga.
R. A. Bridges, M. M .... Opelika, Ala.
Concord R. R. 4-8½ g. 141 m. 41 lo. 1,394 cars.
H. E. Chamberlin, Supt. & P. Agt. Concord, N. H.
J. T. Gordon, M. M. & C. B ...... Concord, N. H.
Concord & Claremont R. R. (See Northern of N. H.)
Conn. Riv. and Ver. Val. R. Rs. 4-8½ g. 130 m. 42 lo. 554 c.
J. Mulligan, Supt. & Pur. Agt. Springfield, Mass.
W. H. Stearns, M. M. & M. C. B. Springfield, Mass.
Conn. & Passumpsic Rivers R. R. (See Passumpsic.)
Connotton Valley R. R. 3 g. 160 m. 26 lo. 1,036 cars.
Samuel Briggs, Gen. Man .... Cleveland, O.
John Bean, M. M .... Canton, O.
Cooperstown & Susquehanna Valley R. R.
4-8½ g. 16 m. 2 lo. 14 cars.
Andrew Shaw, Pres .... Cooperstown, N. Y.
A. Mumford, M. M .... Cooperstown, N. Y.
Corning, Cowanesque & Antrim Ry. (See Syr., G. & C.)
Cornwall R. R. 4-8½ g. 12 m. 5 lo. 166 cars.
J. M. Havard, G. Supt. & M. M ...... Lebanon, Pa.
Levi Blouch, M. C. B .... Lebanon, Pa.
Cornwall & Lebanon R. R. 4-9 g. 5 m.
J. C. Jennings, Supt .... Lebanon, Pa.
Coudersport & Port Allegheny R. R.
3 g. 17 m. 2 lo. 64 cars.
B. A. McClure, Gen. Supt .... Coudersport, Pa.
Credit Valley Ry. 4-8½ g. 184 m. 22 lo. 535 cars.
Wm. Whyte, Gen. Supt .... Toronto, Ont.
John Macnab, Pur. Agt .... Toronto, Can.
D. Preston, Mech. Supt .... Toronto, Can.
Crooked Creek R. R. 3 g. 9 m. 1 lo. 37 cars.
Walter C. Willson, Gen. Man. Webster City, Ia.
Geo. W. Post, Pur. Agt .... Lehigh, Ia.
Crown Point Iron Co.'s R. R. 3 g. 13 m. 3 lo. 135 c.
A. L. Inman, Gen. Man ...... Plattsburg, N. Y.
H. L. Reed, Pur. Agt ...... Crown Point, N. Y.
Jas. McMann, Supt ...... Crown Point, N. Y.
C. W. Sanders, M. M ...... Crown Point, N. Y.
Cumberland Ry. 4-8½ g. 32 m. 1 lo. 64 c.
J. A. Killam, Gen. Man .... Parsboro, N. S.
K. McKinnon, M. M .... Parsboro, N. S.
Cumberland Valley R. R. 4-9 g. 127 m. 25 lo. 474 cars.
J. F. Boyd, Supt ...... Chambersburg, Pa.
A. S. Hull, M. M ...... Chambersburg, Pa.
C. Wicke, M. C. B ...... Chambersburg, Pa.
Cumberland & Maurice River R. R. 4-8½ g. 20 m.
L. H. Dowdney, Supt ...... Port Norris, N. J.
Cumberland & Penn. R. R. 4-8½ g. 55 m. 28 lo. 625 c.
P. L. Burwell, Gen Supt & P A. Cumberland, Md.
N. W. Howson, Mast. of Mach. Mt. Savage, Md.
Nathan Binix, M. C. B ...... Mt. Savage, Md.

D

Danville & New River R. R. 3 g. 43 m. 2 lo. 30 c.
W. T. Sutherlin, Gen. Man ...... Danville, Va.
W. T. Whittaker, M. M ...... Danville, Va.
Danbury & Norwalk R. R. 4-8½ g. 36 m. 7 lo. 112 c.
C. M. Crawford, G. Supt. & P. A. S. Norwalk, Ct.
W. H. Wilkinson, M. M. & C. B. Danbury, Conn.
Danville, Mocksville & So.-Wn. R. R. 3 g. 28 m.
H. M. Shivler, Supt ...... Leakesville, N. C.
Danville, Olney & O. R. R.R. 4-8½ g. 78 m. 3 lo. 34 c.
C. E. Henderson, Rec. & Man ...... Olney, Ill.
W. A. Bell, M. M. & C. B ...... Kansas, Ill.
Dayton & Union R. R. (See Clev., Col., Cin. & Ind.)
Dayton & Michigan R. R. (See Cin., Ham. & Day.)
Del. Lackawanna & W. and N. Y., Lack. & W. R. Rs.
4-8½ g. 930 m. 436 lo. 31,989 cars.
Wm. F. Halstead, Gen. Supt ...... Scranton, Pa.
G. W. B. Cushing, Pur. Agt ...... New York, N. Y.
Walter Dawson, Mast. of Mach ... Scranton, Pa.
Robt. McKenna M. C. B ...... Scranton, Pa.
Bloomsb'g Div.: C. Graham, M. M. Kingston, Pa.
Utica Div.: A. C. Salisbury, Supt ... Utica, N. Y.
Thos. Thatcher, M. M ...... Utica, N. Y.
Morris & Essex Div.; Sussex; P. & D. and C. R. Rs.
A. Reasoner, Supt ...... Hoboken, N. J.
W. H. Lewis, M. M ...... Kingsland, N. J.
J. W. Baker, Mast. Car Rep ...... Dover, N. J.
Oswego & Syracuse Div.:
W. B. Phelps, Supt ...... Oswego, N. Y.
Jas. Buchanan, M. M ...... Syracuse, N. Y.
Syracuse, Binghamton & New York R. R.
4-8½ g. 81 m. 20 lo. 598 cars.
W. K. Niver, Gen. Supt ...... Syracuse, N. Y.
Jas. Buchanan, M. M ...... Syracuse, N. Y.
Cayuga Div.: W. R. Humphrey, Supt Ithaca, N. Y.
Buffalo Div.: T. B. Griffith, M. M. Buffalo, N. Y.
Delaware, Maryland & Virginia R. R.
4-8½ g. 101 m. 7 lo. 145 cars.
Tho. Groom, Supt ...... Lewes, Del.
Geo. Messick, M. M ...... Lewes, Del.
W. H. Virden, M. C. B ...... Lewes, Del.
Delaware River R. R. 4-8½ g. 20 m. 3 lo. 8 cars.
E. H. Green, Supt ...... Pedricktown, N. J.
Delaware Western R. R. (See Balt. & Phil.)
Delaware & Chesapeake R. R. (See Penna.; (4) Div.)
Delaware & Hudson Canal Co.
4-3 and 4-8½ g. 634 m. 180 lo. 10,799 cars.
C. F. Young, Pres & Gen. Man. Honesdale, Pa.
H. G. Young, Asst. Gen. Man ... Honesdale, Pa.
J. White Sprong, Pur. Agt ...... Albany, N. Y.
R. C. Blackall, Supt. of Mach ...... Albany, N. Y.
Susq. Div.: C. D. Hammond, Supt. Albany, N. Y.
Tho. Howard, M. M ...... Oneonta, N. Y.
J. R. Skinner, M. C. B ...... Oneonta, N. Y.
Sar. & Ch. Divs.: T. Voorhees, Supt ... Troy, N. Y.
J. L. Corey, M. M ...... Green Island, N. Y.
Chr. Körner, M. C. B ...... Green Island, N. Y.
Pa. Div.: R. Manville, Supt & Pur Agt. and
S. H. Dotterer, M. M ...... Carbondale, Pa.
T. Orchard, M. C. B ...... Carbondale, Pa.
Denver Circle R. R. 3 g. 12 m. 7 lo. 15 cars
Theo. C. Henry, Gen. Man ...... Denver, Col.
J. H. Bedson, Gen. Supt ...... Denver, Col.
Denver, Utah & Pacific R. R. 3 g. 34 m. 4 lo. 171 c.
L. M. Fouts, Supt ...... Denver, Col.
Denver & New Orleans. 4-8½ g. 140 m. 11 lo. 400 c.
C. W. Fisher, Gen. Man ...... Denver, Col.
Chas. Wheeler, Pur. Agt ...... Denver, Col.
J. H. Kirk, M. M. & M. C. B ...... Denver, Col.
Denver & Rio Grande Ry. 3 g. 1,317 m. 222 lo. 5,932 c.
W. S. Jackson, Rec ...... Denver, Col.
C. M. Hobbs, Pur. Agt ...... Denver, Col.
N. W. Sample, Supt. M. P. & M ... Denver, Col.
(1) Col. & N. M. Div.: R. E. Ricker, G. S. Denver, Col.
1st Div.: W. W. Borst, Supt ...... S. Pueblo, Col.
2d Div.: Cole Lydon, Supt ...... Alamosa, Col.
3d Div.: G. W. Cook, Supt ...... Leadville, Col.
4th Div.: R. M. Ridgway, Supt ...... Salida, Col.
Denver, Rio Grande & Western Ry. 3 g. 369 m.
W. H. Bancroft, Rec. & Gen. Supt.,
Salt Lake City, Utah.
A. L. Horner, Ass't Supt. Salt Lake City, Utah.
S. C. Smith, M. M ...... Salt Lake City, Utah.
Des Moines, Osceola & Southern R. R.
3 g. 100 m. 7 lo. 253 cars.
B. L. Harding, Gen. Man ...... Des Moines, Ia.
Henry Stivers, Supt ...... Osceola, Ia.
L. D. Berry, M. M ...... Osceola, Ia.
Elias Tonet, M. C. B ...... Osceola, Ia.
Des Moines & Ft. Dodge. 4-8½ g. 144 m. 13 lo. 350 c.
C. N. Gilmore, Supt ...... Des Moines, Ia.
John McGrayel, M. M ...... Grand Junction, Ia.
E. A. Avery, M. C. B ...... Grand Junction, Ia.
Det., Bay City & Alpena R. R. 3-2 g. 48 m. 5 lo. 227 c.
Milo Eastman, Supt ...... East Tawas, Mich.
Det., Gr. H. & Mil. Ry. 4-8½ g. 189 m. 39 lo. 696 c.
W. J. Spicer, Gen. Man ...... Detroit, Mich.
John S. Lorimer, Storekeeper ... Detroit, Mich.
W. J. Morgan, Supt ...... Detroit, Mich.
H. Roberts, Mech. Supt ...... Detroit, Mich.
R. P. Baillie, M. M ...... Detroit, Mich.
Det., Lansing & No'n R. R. 4-8½ g. 222 m. 84 lo. 1027 c.
John B. Mulliken, Gen. Man ...... Detroit, Mich.
Allan Bourn, Pur. Agt ...... Detroit, Mich.
Thos. M. Fish, Gen. Supt ...... Ionia, Mich.
G. C. Watrous, M. M. & C. B ...... Ionia, Mich.
Det., Mack. & Marq. R.R. 4-8½ g. 152 m. 16 lo. 1,112 c.
D. McCool, Gen. Supt ...... Marquette, Mich.
W. J. Tench, Pur. Agt ...... Marquette, Mich.
John B. Wilson, Mech. Supt ... Marquette, Mich.
Dorchester & Delaware R.R. (See Penna. (4) Del. Div.)
Dubuque & Dakota R. R. 4-8½ g. 64 m. 2 lo. 54 cars.
A. C. Goodrich, Supt ...... Hampton, Ia.
W. S. Couch, Pur. Agt ...... Dubuque, Ia.
Duck River Valley R. R. (See Nash., Chat. & St. L.)
Dunkirk, Allegheny Valley & Pittsburgh R. R.
4-8½ g. 91 m. 14 lo. 102 cars.
D. Thayer, Gen. Supt ...... Dunkirk, N. Y.
R. C. Moore, Pur. Agt ...... New York, N. Y.
J. C. Haggett M. M. & C. B ...... Dunkirk, N. Y.

E

East Alabama Ry. 5 g. 22 m. 3 lo. 19 cars.
W. W. Barnes, Supt ...... Opelika, Ala.
East Broad Top R. R. 3 g. 30 m. 7 lo. 260 cars.
A. W. Sims, Supt ...... Orbisonia, Pa.
A. W. Greenwood, M. M ...... Orbisonia, Pa.
East St Louis & Carondelet Ry. 4-9 g. 4 lo. 27 c.
Joseph Hill, Gen. Supt ...... East St. Louis, Ill.
East Tenn. & Western North Car. R. R.
3 g. 34 m. 3 lo. 73 cars.
Thomas E. Matson, Supt. Elizabethton, Tenn.
East Tennessee, Virginia & Georgia R. R.
5 g. 1,453 m. 173 lo. 3,670 cars.
Henry Fink, V. P. & Gen. Man. Knoxville, Tenn.
J. F. O'Brien, Gen. Supt ...... Knoxville, Tenn.
J. E. Wilcox, Pur. Agt ...... Knoxville, Tenn.
East Tenn. Div. and No. Car. and Ohio Branches:
F. K. Huger, Supt ...... Knoxville, Tenn.
B. J. Sitton, M. M ...... Knoxville, Tenn.
Jos. Armbruster, M. C. B ... Knoxville, Tenn.
Alabama Div.: J. M. Bridges, Supt ... Selma, Ala.
Simon Gay, M. M ...... Selma, Ala.
W. W. Pierce, M. C. B ...... Selma, Ala.
Memphis & Charleston R. R. (Div.):
R. B. Pegram, Jr., Supt ...... Memphis, Tenn.
H. N. Burford, M. M ...... Memphis, Tenn.
Georgia Div.: J. W. Fry, Supt ...... Atlanta, Ga.
J. E. Mallory, Ass't Supt ...... Macon, Ga.
W. A. Walden, M. M ...... Atlanta, Ga.
J. H. Perkins, M. C. B ...... Atlanta, Ga.
East & West R. R. of Ala. 3 g. 110 m. 9 lo. 85 c.
John Postell, Manager ...... Cedartown, Ga.
M. M. & C. B ...... Cedartown, Ga.
Eastern R. R. 4-8½ g. 283 m. 110 lo. 2,268 cars.
Payson Tucker, Gen. Man ...... Boston, Mass.
D. W. Sanborn, Mast. of Trans. Boston, Mass.
G. F. Hurd, Pur. Agt ...... Boston, Mass.
Amos Pilsbury, S. M. P. & M ... E. Boston, Mass.
A. M. Waitt, G. For. Car Dept ... Salem, Mass.
Con'y Div.: J. W. Sanborn, Supt. Wolfboro J., N. H.
Eastern Kentucky R. R. 4-8½ g. 34 m. 5 lo. 160 c.
H. W. Bates, Man. & Pur. Agt ... Riverton, Ky.
H. W. Crawford, M. M ...... Hunnewell, Ky.
Eastern (Maine) R. R. (See Maine Central.)
Eastern Shore R. R. 4-8½ g. 38 m. 3 lo. 9 c.
W. Thompson, Supt ...... Princess Anne, Md.
F. Strattner, M. M ...... Princess Anne, Md.
Elberton Air-Line R.R. (See Rich. & Dan. N. G. Brs.)
Elizabeth City & Norfolk R. R. (See Norfolk So.)
Elizabethtown, Lex. & Big Sandy R.R. (See Ches. & O.)
Elmira, Cortland & Northern R. R. 4-8½ g.
A. A. McLeod, Gen. Man ...... Elmira, N. Y.
Edw. Mahler, Pur. Agt ...... Elmira, N. Y.
Thos. Kearsley, M. M. & M. C. B. Cortland, N. Y.
Emmitsburg R. R. (See Western Md.)
Erie & Huron Ry. 4-8½ g. 40 m.
E. O. Bickford, Gen Man ...... Toronto, Ont.
Erie & Pittsburg R. R. (See Penna. Co.; (3) Div.)
Etowah & Deaton's R. R. 3 g. 9 m.
D. M. Rogers, Gen. Man ...... Etowah, Ga.
Eureka Springs Ry 4-8½ g. 19 m. 1 lo. 9 cars.
Powell Clayton, Gen. Man. Eureka Springs, Ark.
Eureka & Palisade R. R. 3 g. 97 m. 7 lo. 125 cars.
B. Gilman, Gen. Supt & Pur. Agt. Eureka, Nev.
J. M. Crawford, M. M ...... Palisade, Nev.
A. S. Longley, M. C. B ...... Palisade, Nev.
European & North American R. R. (See Maine Cen.)
Evansville, Rockport & E'n Ry. 4-9 g. 71 m. 5 lo. 98 c.
H. L. Shepard, Supt ...... Evansville, Ind.
Evansv. & Terre Haute. 4-8½ g. 169 m. 26 lo. 973 c.
D. J. Mackey, Gen. Supt ...... Evansville, Ind.
John Torrance, M. M ...... Evansville, Ind.

F

Fitchburg R. R., 4-8½ g. 152 m. 100 lo. 3,566 cars.
John Adams, Gen. Supt ...... Boston, Mass.
F. S. Pratt, Pur. Agt ...... Boston, Mass.
Orlando Stewart, Supt. M. P ...... Boston, Mass.
W. A. Foster, Asst. Supt. M. P. Fitchburg, Mass.
J. W. Marden, M. C. B ... Charlestown, Mass.
Flint & Pere Marq. 4-8½ g. 346 m. 78 lo. 2,664 cars.
H. C. Potter, Gen. Man ...... E. Saginaw, Mich.
D. Edwards, Asst. Gen. Man. E. Saginaw, Mich.
G. G. Cook, Pur. Agt ...... E. Saginaw, Mich.
Sanford Keeler, Gen. Supt. E. Saginaw, Mich.
W. F. Potter, Supt. (E. Div.). E. Saginaw, Mich.
M. V. Meredith, Supt. (W. Div.) E. Saginaw, Mich.
T. J. Hatswell, M. M ...... E. Saginaw, Mich.
H. M. Perry, M. C. B ...... E. Saginaw, Mich.
Florida Ry. & Nav. Co. 5 g. 488 m. 31 lo. 397 c.
D. E. Maxwell, Gen. Supt ... Fernandina, Fla.
R. V. Dohoney, M. M. & C. B. Fernandina, Fla.
Florida Southern Ry. 3 g. 91 m. 6 lo. 96 cars.
Sherman Conant, Gen. Man ...... Palatka, Fla.
Jas. D. Hollister, Supt ...... Palatka, Fla.
St. J. & L. Eustis Div.:
W. J. Jarvis, Supt ...... Ft. Mason, Fla.
Fonda, Johnst'n & Gloversv. 4-8½ g. 26 m. 5 lo. 35 c.
Lawton Caten, Supt ...... Gloversville, N. Y.
G. V. Putman, M. M ...... Gloversville, N. Y.
Fond du Lac, Amboy & Peoria. 3 g. 30 m. 2 lo. 35 c.
Alonzo Kinyon, Supt. & P. A. Fond du Lac, Wis.
Fort Dodge & Fort Ridley R. R. (See Minn. & St. L.)
Franklin & Prov. & Hopkinton. 22 m.
E. T. Logee, Supt ...... Milford, Mass.
Ft. Madison & No.-West'n Ry. 3 g. 45 m. 4 lo. 121 c.
S. B. Kenrick, Rec. & Pur. Agt. Ft. Madison, Ia.
I. L. Lamb, M. M. & C. B ...... Ft. Madison, Ia.
Ft. Wayne, Cin. & Louisv. 4-8½ g. 128 m. 10 lo. 250 c.
White Water R. R 4-8½ g. 65 m. 5 lo. 170 cars.
W. W. Worthington, Gen. Supt ... Ft. Wayne, Ind.
T. H. Haberkorn, M. M ...... Ft. Wayne, Ind.
Wm. Knight, M. C. B ...... Ft. Wayne, Ind.
Ft. Worth & Denver City Ry. 4-8½ g. 114 m. 8 lo. 443 c.
C. L. Frost, Gen. Supt ...... Fort Worth, Tex.
Freehold & New York Ry. 4-8½ g. 15 m. 4 lo. 40 c.
J. E. Ralph, Supt. & Pur. Agt. Freehold, N. J.
M. C. Mooney, M. M ...... Freehold, N. J.
C. H. Snedeker, M. C. B ...... Freehold, N. J.
Fulton County N. G. Ry. 3 g. 61 m. 4 lo. 168 cars.
A. C. Atherton, Gen. Supt. & P. Agt. Lewiston, Ill.

G

Gainesville & Dahlonega R. R. 3 g. 15 m.
W. P. Price, Pres ...... Dahlonega, Ga.
Gainesville, Jefferson & Southern R.R. (See Cen. of Ga.)
Gal., Harrisburg & San Antonio Ry. (See Cen. Pac.)
Galveston, Houston & Hend. R.R. (See Mo. Pac. (5) Div.)
Galveston, Sabine & St. Louis Ry.
4-8½ g. 15 m. 2 lo. 27 cars.
Brad. Barner, Gen. Man ...... Longview, Tex.
Chas. H. Jewell, Gen. Supt ...... Longview, Tex.
Geneva, Ithaca & Sayre R. R. (See Lehigh Val.)
George's Creek & Cumberland R. R.
4-9 g. 25 m. 6 lo. 212 cars.
J. A. Millholland, Gen. Man ... Cumberland, Md.
Georgetown & Lane's R. R. 5 g. 36 m. 2 lo. 52 c.
G. W. Earle, Gen. Supt ...... Georgetown, S. C.
Georgia R. R. 5 g. 307 m. 42 lo. 1,048 cars.
John W. Green, Gen. Man ...... Augusta, Ga.
John S. Cook, M. M ...... Augusta, Ga.
T. M. Preval, M. C. B ...... Augusta, Ga.
Georgia Pacific Ry. 5 g. 218 m.
I. Y. Sage, Gen. Supt ...... Birmingham, Ala.
S. H. Purcell, Div. Supt ...... Greenville, Miss.
G. H. Barnum, Div. Supt ...... Columbus, Miss.
Gettysburg & Harrisburg R. R. 4-9 g. 21 m.
W. H. Woodward, Supt. Pine Grove Furnace, Pa.
Grand Haven R. R. (See Chic. & W. Mich.)
Grand Junction Ry. (See Midland of Can.)
Grand Rapids, Indiana & Mackinaw. (See Gr. R. & I.)
G'd Rap., Newaygo & L. S. R. R. (See Chic. & W. M.)
Grand Rapids & Indiana. 4-8½ g. 528 m. 52 lo. 1,724 c.
W. O. Hughart, Gen. Man. Grand Rapids, Mich.
W. R. Shelby, Pur. Agt ... Grand Rapids, Mich.
S. D. Bradley, M. M ...... Grand Rapids, Mich.
No'n Div.: J. M. Metheany, Supt. G'nd Rap., Mich.
So'n Div.: P. S. O'Rourke, Supt. Fort Wayne, Ind.
Grand Southern Ry. of New Brunswick.
4-8½ g. 82 m. 5 lo. 54 cars.
J. N. Greene, Gen. Man ...... St. George, N. B.
F. W. Holt, Supt ...... St. George, N. B.
Thomas Logan, M. M ...... St. George, N. B.
Grand Tower & Carbondale. 4-8½ g. 25 m. 6 lo. 357 c.
J. C. Simpson, Supt ...... Carbondale, Ill.
Hugh Smith, M. M ...... Murphysboro, Ill.
O. L. Garrison, Pur. Agt ...... St. Louis, Mo.
Grand Trunk Ry. 4-8½ g. 2,332 m. 660 lo. 16,330 c.
Joseph Hickson, Gen. Man ...... Montreal, Can.
Jas. Stephenson, Supt ...... Montreal, Can.
Wm. Wainright, Asst. Man ...... Montreal, Can.
Mont. Divs.: W. J. Spicer, Supt. Montreal, Can.
Jno. Taylor, Gen. Storekeeper. Montreal, Can.
Herbert Wallis, Mech. Supt ... Montreal, Can.
Wm. McWood, Supt. Car Dept. Montreal, Can.
J. Haskoni, Div. M. S ...... Richmond, P. Q.
Gt. West'n Div.: Chas. Stiff, Supt. Hamilton, Ont.
E. Baines, Store Kpr ...... London, Ont.
C. K. Domville, Mech. Supt ... Hamilton, Ont.
C. F. Hanson, Lo. For ...... London, Ont.
J. D. McIlwain, Supt. Car Dept. London, Ont.
Chi. & Gr. Trunk Ry. 4-8½ g. 339 m. 103 lo. 1,191 c.
W. J. Spicer, Gen. Man ...... Chicago, Ill.
W. H. Pettibone, Supt ... Battle Creek, Mich.
A. Judd, Pur. Agt ...... Fort Gratiot, Mich.
H. Roberts, Mech. Supt ...... Detroit, Mich.
Midland of Can. 4-8½ g. 471 m. 44 lo. 1,423 c.
W. B. Ferguson, Supt ...... Peterboro, Ont.
J. D. Barnet, Mech. Supt ... Peterboro, Ont.
Grand Trunk, Georgian Bay & Lake Erie Ry. (See G. T.)
Great Western Ry. (See Grand Trunk; G. W. Div.)
Green Bay, Winona & St. Paul R. R.
4-8½ g. 250 m. 19 lo. 623 cars.
Timothy Case, Gen. Man. & P. A. Green Bay, Wis.
A. Fenwick, M. M ...... Ft. Howard, Wis.
Green Cove Spring & Melrose R.R. 3 g. 32 m. 1 lo. 1 c.
S. Ackley, Pres ...... Philadelphia, Pa.
Greenwood, Laurens & Spart'g. 5 g. 4 lo.
J. N. Bass, Supt ...... Augusta, Ga.
T. F. Warwick, M. M. & M. C. B. Augusta, Ga.
Greenwich & Johnsonville Ry. 4-8½ g. 15 m. 1 lo. 7 c.
J. H. Thompson, Supt ...... Greenwich, N. Y.
Gulf, Col. & Santa Fé Ry. 4-8½ g. 536 m. 51 lo. 1,400 c.
Webster Snyder, Gen. Man. Galveston, Texas.
Jno. W. Thorne, Pur. Agt ... Galveston, Texas.
W. H. Reilly, M. M. & M. C. B. Galveston, Texas.
Gulf, W'n Texas & Pac. Ry. 4-8½ g. 68 m. 6 lo. 74 c.
M. D. Monserrate, Supt. & Pur. Agt. Cuero, Tex.
James Mooney M. M ...... Cuero, Texas.

H

Hannibal & St. Jo. R. R. 4-8½ g. 292 m. 76 lo. 1,906 c.
J. F. Barnard, Gen. Man ...... St. Joseph, Mo.
S. E. Crance, Gen. Supt ...... Hannibal, Mo.
Wm. Irving, Pur. Agt ...... Chicago, Ill.
N. J. Paradise, Supt. M. M ...... Hannibal, Mo.
Chas. Coller, For. Car Dept ...... Hannibal, Mo.
Hanover Branch R. R. 4-8½ g. 8 m. 2 lo. 18 cars.
E. Y. Perry, Supt ...... South Hanover, Mass.
Hanover Junction, Hanover & Gettysburg R. R.
4-8½ g. 74 m. 10 lo. 140 cars.
H. D. Scott, Gen. Supt ...... Gettysburg, Pa.
John J. Bingley M. M ...... Hanover, Pa.
Jas. Harthorn, M. C. B ...... Hanover, Pa.
Harrisburg & Potomac R. R. 4-8½ g. 41 m. 3 lo. 45 c.
R. H. Middleton, Supt ...... Boiling Springs, Pa.
Hartford & Conn. Val. R. R. 4-8½ g. 47 m. 9 lo. 196 c.
O. M. Shepard, Supt ...... New Haven, Ct.
John Henry, Jr., Supt. M. P. Hartford, Conn.
Hartford & Conn. W'n R. R. 4-8½ g. 110 m. 16 lo. 495 c.
John F. Jones, Supt ...... Hartford, Ct.
J. C. Barton, M. M ...... Hartford, Ct.
Hartwell R. R. (See Rich. & Dan.; N. G. Brs.)
Hecla & Torch Lake R. R. 4-1 g. 5 m. 5 lo. 165 cars.
W. A. Childs, Gen. Man ...... Calumet, Mich.
Herkimer, Newport & Poland Ry.
3-6 g. 17 m. 2 lo. 24 cars.
Albert Wilber, Supt ...... Herkimer, N. Y.
Hobart & Manistee River R. R. 3 g. 9 m. 2 lo. 42 c.
H. W. Marsh, Supt ...... Hobart, Mich.
Hot Springs R. R. 3 g. 25 m. 3 lo. 37 cars.
J. S. Conger, Supt ...... Hot Springs, Ark.
L. Finlay, M. M ...... Malvern, Ark.
Housatonic R. R. 4-8½ g. 126 m. 23 lo. 879 cars.
W. H. Yeomans, Supt ...... Bridgeport, Ct.
D. S. Draper, Pur. Agt ...... Bridgeport, Ct.
N. Slingland, M. M ...... Falls Village, Ct.
J. J. Ferris, M. C. B ...... Falls Village, Ct.
Houston Belt Ry 4-8½ and 3 gauge 16 miles.
S. L. Werden, V. P. & Gen. Man. Houston, Tex.
Houston, East & West Tex. Ry. 3 g. 150 m. 10 lo. 570 c.
Paul Bremond, Pr. & Pur. Agt. Houston, Tex.
E. L. Bremond, Gen. Man ...... Houston, Tex.
Ed. Campbell, M. M ...... Houston, Tex.
C. F. Schelewa, M. C. B ...... Houston, Texas.
Houston & Tex. Cen. Ry. 4-8½ g. 750 m. 78 lo. 2,526 c.
J. Waldo, V. Pr. & Gen. Man ... Houston, Tex.
A. H. Swanson, Gen. Tr. Man ... Houston, Tex.
Pur. Agt ...... New York, N. Y.
L. C. Noble, Gen. M. M ...... Houston, Tex.
James McGee, M. C. B ...... Houston, Tex.
So. & Wn. Divs.: M. G. Howe, Supt. Houston, Tex.
No. & Ml. Divs.: G. A. Quinlan, Supt., and
C. H. Burns, Asst. M. M ...... Corsicana, Tex.
No.-Wn. Div.: Donald Allen, Supt ... Waco, Tex.
Humeston & Shenandoah R. R.
4-8½ g. 113 m. 18 lo. 80 cars.
F. O. Wyatt, Gen. Man ...... Clarinda, Ia.
Supt ...... Clarinda, Ia.
W. B. Snyder, M. M ...... Shenandoah, Ia.
Huntingdon & Br. Top Mt. 4-8½ g. 65 m. 18 lo. 318 c.
Geo. F. Gage, Gen. Man ...... Huntingdon, Pa.
Samuel B. Knight, Pur. Agt. Philadelphia, Pa.
William Barkla M. M ...... Saxton, Pa.

I

Illinois Central R. R. 4-8½ g. 1,928 m. 334 lo. 8,565 c.
E. T. Jeffery, Gen. Supt ...... Chicago, Ill.
O. Ott, Pur. Agt ...... Chicago, Ill.
Henry Schlacks, Supt. of Mach ... Chicago, Ill.
W. B. Snow, M. M. Car Works ... Chicago, Ill.
(1) Ill. & Ia. Divs.: C. A. Beck, Supt ... Chicago, Ill.
Chic. Div.: T. J. Hudson, Supt ...... Cairo, Ill.
Wm. Renshaw, M. M ...... Chicago, Ill.
Mid. Div.: H. L. Frisbie, Supt ...... Pontiac, Ill.
Spring. Div.: W. Wilkinson, Supt. Springfield, Ill.
Wm. Griffin, M. M ...... Clinton, Ill.
No'n Div.: J. C. Jacobs, Supt ...... Amboy, Ill.
J. B. Edams, M. M ...... Amboy, Ill.
Ia. Div.: M. Gilleas, Supt ...... Dubuque, Ia.
Thos. W. Place, M. M ...... Waterloo, Ia.
(2) So. Divs.: C. M. Sheafe, Supt ... New Orleans, La.
La. Div.: J. M. Turner, Supt. McComb City, Miss.
W. B. McKenna, M. M ... McComb City, Miss.
Miss. Div.: J. G. Mann, Supt ...... Jackson, Tenn.
J. F. White, M. M ...... Water Valley, Miss.
Illinois Midland Ry. 4-8½ g. 176 m. 12 lo. 611 cars.
D. H. Conklin, Rec. & Gen. Man ...... Decatur, Ill.
O. E. Grady, Train Mast ...... Decatur, Ill.
Frank Young, For. Shops ...... Paris, Ill.
Illinois & St. Louis R. R. 4-8½ g. 19 m. 10 lo. 450 c.
C. H. Sharman, Gen. Supt. & P. A. St. Louis, Mo.
D. J. Timlin, M. M ...... Belleville, Ill.
Charles Rothe, M. C. B ...... E. St. Louis, Ill.
Indiana, Bloomington & Western Ry.
4-8¾ g. 826 m. 108 lo. 4,018 cars.
C. E. Henderson, Gen. Man. Indianapolis, Ind.
I. H. Wilson, Gen. Supt ...... Indianapolis, Ind.
H. C. Norton, Pur. Agt ...... Indianapolis, Ind.
Jos. S. Porter, Div. M. M ...... Sandusky, O.
B. Warren, M. M ...... Indianapolis, Ind.
M. Fogarty, Div. M. M ...... Urbana, Ill.
W. B. Warren, Div. M. M ... Indianapolis, Ind.
Indiana, Illinois & Iowa R.R. 4-8½ g. 104 m. 5 lo. 83 c.
F. M. Drake, Pres ...... Kankakee, Ill.
T. P. Shonts, Gen. Supt ...... Kankakee, Ill.
R. C. Ackley, M. M ...... Kankakee, Ill.
Indiana & Illinois Southern Ry. 3 g. 91 m. 3 lo. 69 c.
W. C. Lyon, Gen. Man. & P. Agt. Robinson, Ill.
J. S. Pickering, M. M. & C. B .. Effingham, Ill.
Indianapolis, Decatur & Springfield Ry.
(See Ind., Bloom. & West'n).
Indianapolis & Evansville Ry. 4-8½ g. 54 m.
D. J. Mackey, Supt ...... Evansville, Ind.
Indianapolis & St. Louis R. R. (See C., C., C. & I.)
Indianapo. & Vincennes R. R. (See Penna. Co.; (8) Div.)
Intercolonial Ry. 4-8½ g. 846 m. 135 lo. 4,500 cars.
David Pottinger, Chief Supt ...... Moncton, N. B.
T. V. Cook, Gen. Storekeeper ... Moncton, N. B.
H. A. Whitney, Mech. Supt ...... Moncton, N. B.
Ewd. D. Shaffer, M. C. B ...... Moncton, N. B.
M. & C. Div.: J. E. Price, Supt. Cambellton, N. B.
Hal. & St. J. Div.: J. J. Wallace, Supt. Truro, N. B.
Q. & St. F. Div.: A. McDonald, Supt. Riv. du Loup, Q.
International Ry. 4-8½ g. 69 m. 7 lo. 12 cars.
D. E. McFee, Supt ...... Sherbrooke, Que.
J. Ruelle, M. M ...... Sherbrooke, Que.
W. Charest, M. C. B ...... Sherbrooke, Que.
International & Gt. N'n R. R. (See Mo. Pac.; (5) Div.)
Iowa Falls & Sioux City R. R. (See Ill. Cen.)
Iron Ry. (See Tol., Cin. & St. L.)
Iron Mountain & Helena R. R. (See Mo. Pac.; (4) Div.)
Ithaca Auburn & Western Ry. (See Southern Cen.)

J

Jacksonville So.-E'n R. R. 4-8½ g. 54 m. 5 lo. 69 c.
E. S. Greenleaf, Supt ...... Jacksonville, Ill.
Ira F. Petrie, M. M ...... Jacksonville, Ill.
Jacksonville, St. Augustine & Halifax River Ry.
3 g. 76 m. 3 lo. 27 cars.
W. L. Crawford, Gen. Man. Jacksonville, Fla.
H. S. Ming, Supt ...... Jacksonville, Fla.
Jacksonv., Pensacola & Mob. (See Fla. Cent. & W.)
Jacksonville, Tampa & Key West Ry. 5 g. 56 m.
G. W. Bentley, Gen. Man ... Jacksonville, Fla.
M. R. Moran, Supt ...... Jacksonville, Fla.
F. B. Hurlbut, M. C. B ...... Jacksonville, Fla.
Jamesville & Washington R. R. (See Norfolk So'n.)
Jeffersonv'l, Madison & Indpls. R. R. (See (9) Pa. Co.)
Jersey City & Albany R. R. 4-8½ g. 38 m.
J. W. McCulloh, Manager ... Jersey City, N. J.
Jersey City & Bergen R. R. 4-10 g. 21 m. 2 lo. 13 c.
T. M. Sayre, Supt ...... Jersey City, N. J.
Jersey Shore, Pine Creek & Buff. Ry. (See Phil. & R.)
Junction & Breakwater R.R. (See Del., Md. & Va.)

K

Kaaterskill R. R. 3 g. 8 m.
J. H. Jones, Supt ...... Rondout, N. Y.
Kankakee & Seneca R.R. (See Cin., Ind., St. L. & Chi.)
Kansas Central R. R. (See Union Pacific.)
Kansas City, Fort Scott & Gulf R. R.
4-8½ g. 389 m. 75 l. 2,037 c.

Geo. H. Nettleton, *Gen. Man*..Kansas City, Mo.
L. W. Towne, *Supt* ....Kansas City, Mo.
H. P. Jacques, *Pur. Agt* .... Kansas City, Mo.
J. S. McCrum, *M. M* ....Kansas City, Mo.
A. N. Montier, *M. C. B* ....Kansas City, Mo.
Kansas Cy, Lawrence & So. Kan. (*See At., Top.& S. F.*)
Kansas City, Springfield & Memphis R. R.
4-8½ g. 283 m. 10 lo. 456 cars.
George H. Nettleton, *Pres* ....Kansas City, Mo.
L. W. Towne, *Supt* ....Kansas City, Mo.
H. P. Jacques, *Pur. Agt* ....Kansas City, Mo.
J. S. McCrum, *M. M* ....Kansas City, Mo.
A. N. Montier, *M. C. B* ....Kansas City, Mo.
Kansas City, St. Joseph & Council Bluffs; and St. Jo. & Des Moines R. Rs. 4-8½ & 3 g. 368 m. 41 lo. 1,148 c.
J. F. Barnard, *Gen. Supt* ....St. Joseph, Mo.
J. R. Hardy, *Supt* .... St. Joseph, Mo.
Wm. Irving, *Pur. Agt* ....Chicago, Ill.
F. A. Chase, *M. M* .... St. Joseph, Mo.
Thos. Aylesbury, *S. For. Car. Dep.*St. Joseph, Mo.
Kansas City & Southern Ry. 4-8½ g. In progress.
Wm. Bailey, *Pres* ....Kansas City, Mo.
Kansas Coal Belt R. R. 4-8½ g. In progress.
C. H. Malin, *Gen. Man* ....Girard, Kan.
F. A. Hill, *Supt* ....Girard, Kan.
Kansas & Gulf Short Line R. R. 33 m. 2 lo. 32 cars.
Eli Culverhouse, *Gen. Man* ....Tyler, Tex.
V. K. Stevenson, *Pur. Agt* ....New York, N. Y.
Kendall & Eldred R. R. (*See Buf., N. Y. & Phil.*)
Kent Northern Ry. 4-8½ g. 27 m. 2 lo. 16 cars.
J. C. Brown, *Gen. Man* ....Richibucto, N. B.
Kentucky Central R. R. 4-9 g. 255 m. 28 lo. 640 cars.
G. W. Bender, *Supt* ....Covington, Ky.
W. T. Smith, *M. of Mach* ....Covington, Ky.
Kentucky & South Atlantic Ry. 3 g. 23 m. 3 lo. 52 c.
Geo. B. Harper, *Supt. & P. A*..Mt. Sterling, Ky.
Geo. W. Lewis, *M. M* ....Mt. Sterling, Ky.
Keokuk & Des Moines R. R. (*See Chi., R. I. & Pac.*)
Kinzua R. R. (*See Buf., N. Y. & Phil.*)
Kingston & Pembroke Ry. 4-8½ g. 104 m. 9 lo. 214 c.
B. W. Folger, *Supt* ....Kingston, Ont.
J. H. Taylor, *Pur. Agt* ....Kingston, Ont.
J. H. Taylor, *M. M* ....Kingston, Ont.
Knox & Lincoln R. R. 4-8½ g. 49 m. 5 lo. 103 cars.
C. A. Coombs, *Supt* ....Bath, Me.
Wm. A. Field, *M. M* ....Bath, Me.
C. L. Turner, *M. C. B* ....Bath, Me.
Knoxville & Augusta R. R. 5 g. 16 m. 2 lo. 34 cars.
R. N. Hood, *Gen. Man. & P. Agt.*Knoxville, Tenn.
J. M. Hood, *Supt* ....Knoxville, Tenn.

L

Lackawanna & Pittsburgh R. R. 3 g. 97 m.
Geo. W. Chapman, *Rec* ....Angelica, N. Y.
Lake Champlain & Moriah R.R. 4-8½ g. 8 m. 8 lo. 222c.
E. B. Hedding, *Supt* ....Port Henry, N. Y.
Lake Erie & Western Ry. 4-8½ g. 388 m. 53 lo. 1,701 c.
J. H. Cheney, *Gen. Man* .... Bloomington, Ill.
D. S. Hill, *Gen. Supt* ....Bloomington, Ill.
T. H. Perry, *Pur. Agt* ....Bloomington, Ill.
H. L. Cooper, *Supt. of Equipment* ....Lima, O.
Lake George & Muskegon River R. R.
4-8½ g. 20 m. 4 lo. 79 cars.
W. S. Gerrish, *Gen. Man* ... Muskegon, Mich.
Lake Shore & Michigan So'n Ry.
4-8½ g. 1,340 m. 547 lo. 17,115 cars.
John Newell, *Pres* .... Cleveland, O.
P. P. Wright, *Gen. Supt* ....Cleveland, O.
L. G. Higgins, *Pur. Agt* ....Cleveland, O.
G. W. Stevens, *Supt. M. P* ....Cleveland, O.
John Kirby, *Gen. M. C. B* ....Cleveland, O.
East'n Div.: C. B. Couch, *Supt* ....Cleveland, O.
J. S. Graham, *M. M* ....Buffalo, N. Y.
A. C. Robson, *M. C. B* ....Buffalo, N. Y.
L. O. Gassett, *M. M* ....Cleveland, O.
J. Withycombe, *M. C. B* ....Cleveland, O.
Frank. Div.: G. H. McIntire, *Supt.*Youngstown, O.
Toledo Div.: Thos. Flesher, Jr., *Supt.*Cleveland, O.
J. M. Sanborn, *M. M* ....Norwalk, O.
W. O. Smith, *M. C. B* .... Norwalk, O.
Mich. Divs.: J. E. Curtis, *Supt* .... Toledo, O.
Det. Brs.: T. J. Charlesworth, *Supt.* Detroit, Mich.
Lansing, Ypsilanti & Ft. Wayne Branches.
W. H. Caniff, *Supt* ....Hillsdale, Mich.
Western Div.: A. G. Amsden, *Supt*...Chicago, Ill.
W. L. Gilmore, *M. M* ....Elkhart, Ind.
Frank O. Bray, *M. C. B* ....Adrian, Mich.
Gr. Rap. Br.: M. E. Wattles, *Supt.*Kalamazoo, Mich.
Lake Tahoe R. R. 3 g. 10 m. 3 lo. 49 cars.
D. L. Bliss, *Gen. Man* ....Carson, Nev.
John T. Rogers, *Gen. Supt* .... Carson, Nev.
M. M ....Carson, Nev.
Leavenworth, Topeka & So. W'n Ry. (*See A., T. & S. F.*)
Lebanon Springs R. R. 4-8½ g. 58 m. 5 lo. 44 c.
W. C. Alstyne, *Gen. Man* ....Albany, N. Y.
W. H. Hawkins, *Pur. Agt* ....Albany, N. Y.
Geo. Tefft, *M. M* ....Chatham, N. Y.
Lehigh Valley R. R. 4-8½ g. 495 m. 392 lo. 36,998 c.
H. S. Goodwin, *Gen. Supt* ....Bethlehem, Pa.
W. C. Alderson, *Pur. Agt* ....Philadelphia, Pa.
John I. Kinsey, *M. M* ....So. Easton, Pa.
John S. Lentz, *M. C. B* ....Packerton, Pa.
N. J. Div.: Jas. Donnelly, *Supt.* Perth Amboy, N. J.
Coal Rds.: J. I. Blakeslee, *Supt.* Mauch Chunk, Pa.
D. Clark, *M. M* ....Hazleton, Pa.
John Campbell, *M. M* ....Delano, Pa.
B. M. Div.: A. G. Brodhead, *S.* Mauch Chunk, Pa.
P. Hofecker, *M. M* ....Weatherly, Pa.
Wy. Div.: A. Mitchell, *S. & M. M.* Wilkesbarre, Pa.
Pa. & N. Y.; and Geneva, Ithaca & Sayre R. Rs.
Wm. Stevenson, *Gen. Supt* ....Sayre, Pa.
J. N. Weaver, *M. M* ....Sayre, Pa.
Jno. S. Lentz, *M. C. B* ....Packerton, Pa.
Lehigh & Hudson River Ry. 4-8½ g. 63 m. 8 lo. 350 c.
Grinnell Burt, *Gen Man* ....Warwick, N. Y.
N. L. Furman, *Supt* ....Warwick, N. Y.
John Sayre, *Pur. Agt* ....Warwick, N. Y.
S. Mills, *M. M* ....Warwick, N. Y.
Lehigh & Lackawanna and Lehigh & Susquehanna R. Rs. (*See Phil. & Read.; N. J. Cen. Div.*)
Lewis & Kennebec R. R. (*See Quebec Cen.*)
Litchfield, Carrollton & Western R. R. 4-8½ g. 22 m.
H. S. Carroll, *Prest. & G. Man.* Carrollton, Ill.
Ligonier Valley R. R. 4-8½ g. 11 m. 2 lo. 22 cars.
Thos. A. Mellon, *Gen. Manager* ....Pittsburg, Pa.
Geo. Senft, *Supt. & P. Agt* ....Latrobe, Pa.
Little Miami R. R. (*See Penna. Co.'s Rds.; (8) Div.*)
Little Rock, Miss. River & Texas Ry.
4-8½ g. 170 m. 12 lo. 280 cars.
H. Wood, *Gen. Man* ....Little Rock, Ark.
F. A. Lister, *Gen. Supt* ....Little Rock, Ark.
F. Hufsmith, *M. M. & C. B* ....Argenta, Ark.
Little Rock & Fort Smith. 4-8½ g. 170 m. 13 lo. 360 c.
Hy. Wood, *Gen. Man* ....Little Rock, Ark.
F. A. Lister, *Supt* ....Little Rock, Ark.
F. Hufsmith, *M. M. & M. C. B* ....Argenta, Ark.
Little Saw Mill Run R. R. 3 & 4-8½ g. 8 m. 4 lo. 327 c.
T. Hartley, *Gen. Man* ....Banksville, Pa.
Long Island R. R. 4-8½ g. 352 m. 92 lo. 953 cars.
I. D. Barton, *Gen. Supt.* Long Island City, N. Y.
Benj. Norton, *Pur. Agt.* Long Island City, N. Y.
C. A. Thompson, *M. M.* Long Island City, N. Y.
Longview & Sabine Valley R. R. (*See Gal. Sab. & St. L.*)
Louisiana W'n R. R. (*See Cen. Pac.; (4) H. & S. A. Div.*)
Louisville, Cin. & Lexington R. R. (*See Louis. & N.*)
Louis., Evans. & St. L. Ry. 4-8½ g. 254 m. 24 lo. 1,032 c.
Geo. T. Evans, *Rec* ....Louisville, Ky.
C. F. Dalton, *Gen. Supt* ....Louisville, Ky.
F. P. Boatman, *M. M* ....Evansville, Ind.
Louisville, New Albany & Chicago Ry.
4-8½ g. 479 miles 60 lo. 3,700 cars.
John B. Carson, *Gen. Man* ....Chicago, Ill.
T. L. Dunn, *Gen. Supt* ....Chicago, Ill.
H. O. Nourse, *Pur. Agt* ....Chicago, Ill.
Josiah Bettis, *M. M. & C. B* ....New Albany, Ind.
C. C. F. Bent, *Supt. Trans* ....Lafayette, Ind.
Louisville, New Orleans & Tex. Ry. 455 m. In progress.
Jas. M. Edwards, *Gen. Man* ....Memphis, Tenn.
E. J. Anderson, *M. M* ....Memphis, Tenn.
John Bradley, *Div. Supt* ....New Orleans, La.
C. J. Birdsong, *Div. Supt* ....Memphis, Tenn.
Louisville & Nashville R. R.
5 g. 2,180 m. 380 lo. 12,197 cars.
Reuben Wells, *Gen. Man* ....Louisville, Ky.
Geo. F. Evans, *Supt* ....Louisville, Ky.
P. P. Huston, *Pur. Agt* ....Louisville, Ky.
Reuben Wells, *Supt. Mach* ....Louisville, Ky.
Louisv., Cin. & Lex. Divs.:
J. G. Metcalf, *Supt. Trans* ....Louisville, Ky.
P. Leeds, *M. M* ....Louisville, Ky.
J. W. Luttrell, *M. M* ....Louisville, Ky.
J. G. Clifford, *M. M.* (2d & C. Div.). Bowling Grn. Ky.
Henderson Div.: J. Geddes, *Supt.* Henderson, Ky.
W. P. Pike, *M. M* ....Nashville, Tenn.
Nash. & D. Div.: J. Geddes, *Supt.* Nashville, Tenn.
Elkton & Guthrie:
J. Geddes, *Supt* ....Nashville, Tenn.
S. & N. A. Div.: Levi Hedge, *Supt.* Birmingham, Ala.
C. W. White, *M. M* ....Birmingham, Ala.
Mob. & M.; N. Div. Pens. & Sel.; Sl. & Mont. R. Rs.:
B. C. Epperson, *Supt* ....Montgomery, Ala.
J. N. Hall, *M. M.* (Mont. Shops). Montgomery, Ala.
N. O. Div.: O. M. Dunn, *Supt* ....New Orleans, La.
Wm. Adair, *M. M* ....Mobile, Ala.
Memp. Div.: W. Colcamp, *Supt.* Memphis, Tenn.
J. V. Slusser, *M. M* ....Memphis, Tenn.
St. L. Div.: C. O. Parker, *Supt.* Montgomery, Ala.
Thos. Walsh, *M. M* ....Mt. Vernon, Ill.
Pensacola and So. Div. Pens. & Selma and P. & A. Rds.:
E. O. Saltmarsh, *Supt* ....Pensacola, Fla.
W. D. Robb, *M. M* ....Pensacola, Fla.
Louisville & Wadley R. R. 5 g. 10 m. 1 lo. 5 c.
J. H. Wilkins, *Supt. & Pur. Agt.* Louisville, Ga.

M

Macon & Brunswick R. R.
(*See E. Tenn., Vir. & Ga.; At. & Ga. Divs.*)
Maine Central R. R. 4-8½ g. 525 m. 82 lo. 2,168 c.
Payson Tucker, *Gen. Man* ....Portland, Me.
Amos Pillsbury, *M. M* ....Waterville, Me.
C. H. Kenison, *M. C. B* ....Augusta, Me.
Eastern Maine. 3 g. 19 m. 2 lo. 40 c.
L. L. Lincoln, *Supt* ....Portland, Me.
Manchester & Keene R.R. 4-8½ g. 30 m. (*See Concord.*)
Manchester & Lawrence R. R. (*See Concord.*)
Manchester & North Weare R. R. (*See Concord.*)
Manhattan Ry. 4-8½ g. 32 m. 228 lo. 652 pass. c.
Frank K. Hain, *Gen. Man* ....New York, N. Y.
W. T. Goundie, *Supt. Trans.* New York, N. Y.
T. W. Peeples, *M. M* ....New York, N. Y.
H. A. Webster, *M. C. B* ....New York, N. Y.
Manhattan, Alma & Burlingame Ry. (*See A., T. & S. F.*)
Manitoba Southwestern Colonization Ry.
4-8½ g. 52 m. 3 lo. 125 cars.
J. M. Eagan, *V. Pres* ....Winnipeg, Man.
W. T. Reed, *M. M* ....Winnipeg, Man.
Marietta & Cincinnati R. R. (*See Cin. Wash. & Balt.*)
Marietta & North Georgia R. R. 3 g. 70 m. 4 lo. 45 c.
J. B. Glover, *Supt* ....Marietta, Ga.
W. R. Power, *Pur. Agt* ....Marietta, Ga.
C. Chester, *M. M* ....Marietta, Ga.
Marquette, Houghton & Ontonagon R. R.
4-8½ g. 100 m. 42 lo. 2,530 cars.
John Hornby, *Gen. Man* ....Marquette, Mich.
W. A. Thompson, *Ass't Supt.* Marquette, Mich.
M. B. McGee, *Pur. Agt* ....Marquette, Mich.
W. A. Mahan, *M. M* ....Marquette, Mich.
H. D. Lyons, *M. C. B* ....Marquette, Mich.
Maryland Central R. R. 3 g. 27 m. 4 lo. 56 cars.
S. G. Boyd, *Supt* ....Baltimore, Md.
Marquette & Western. 4-8½ g. 25 m. 10 l. 500 c.
D. McCool, *Gen. Supt* ....Marquette, Mich.
W. J. Tench, *Pur. Agt* ....Marquette, Mich.
J. B. Wilson, *Mech. Supt* ....Marquette, Mich.
Massachusetts Central R. R. 4-8½ g. 48 m. 5 l. 81 c.
E. G. Allen, *Supt. & Pur. Agt* ....Boston, Mass.
E. A. Walker, *M. M* ....So. Sudbury, Mass.
McComb, Deshler & Toledo R. R.
(*See Cin., Ham. & Day.; D. & M. Div.*)
Meadville Ry. (*See Penna. Co.'s Rds.; (2) Div.*)
Memphis & Charleston R. R. (*See E. Tenn. Va. & Ga.*)
Memphis & Lit. Rock R. R. 5 g. 135 m. 14 lo. 299 c.
R. Fink, *G. Man. & P. A* ....Little Rock, Ark.
H. G. Fleming, *Supt* ....Memphis, Tenn.
Thos. Rennell, *M. M* ....Argenta, Ark.
T. Rennell, *M. C. B* ....Argenta, Ark.
Mexican Ry. 4-8½ g. 293 m. 42 lo. 616 cars.
E. W. Jackson, *Gen. Man* ....Mexico, Mex.
Mexican Central Ry. 4-8½ g. 1,224 m. 94 lo. 2,609 c.
Theo. Nickerson, *Pur. Agt* ....Boston, Mass.
D. B. Robinson, *Gen. Man* ....City of Mexico.
D. MacKenzie, *Gen. Supt* ....City of Mexico.
F. W. Johnstone, *Supt. M. P. & M.* City of Mexico.
J. H. O'Brien, *M. M* ....City of Mexico.
G. T. Jarvis, *Div Supt* ....City of Mexico.
A. Smith, *Div. Supt* ....Silao, Mex.
Wm. Davis, *Div. Supt* ....Jimulco, Mex.
R. E. Comfort, *Div. Supt.* Paso del Norte, Mex.
R. S. Simpson, *M. M* ....City of Mexico.
A. Hendee, *M. M* ....Calera, Mex.
C. F. Stewart, *M. M* ....Silao, Mex.
W. L. Wallace, *M. M* ....Jimulco, Mex.
J. G. McCuen, *M. M* ....Chihuahua, Mex.
Tampico Div: E. A. Whorf, *Supt.* Tampico, Mex.
San Blas Div.: C. E. Payne, *Supt.* San Blas, Mex.
Mexican National Ry. 3 g. 766 m. 50 lo. 1,283 c.
Northern General Division:
C. A. Merriam, *Gen. Supt* ....Laredo, Tex.
F. W. Baldwin, *Asst. Gen. Supt.* Laredo, Tex.
John Grace, *M. M* ....Laredo, Tex.
T. Milan, *M. M* ....Corpus Christi, Tex.
Metamoras, Div.:
W. W. Mayberry, *Asst. Supt.* Brownsville, Tex.
Galveston Div.:
T. E. Quinn, *Asst. Supt* ....Galveston, Tex.
Southern General Division:
W. E. Lewis, *Supt* ....Mexico, Mex.
R. C. Peebles, *Asst. Supt* ....Mexico, Mex.
J. M. Winslow, *M. M* ....Mexico, Mex.
Zacatecas Div.:
C. Langrand, *Manager* ....Zacatecas, Mex.
Michigan Cen. R. R. 4-8½ g. 1,485 m. 357 lo. 11,284 c.
H. B. Ledyard, *Pres. & Gen. Man.* Detroit, Mich.
E. C. Brown, *Gen. Supt* ....Detroit, Mich.
Robert Miller, *Asst. Gen. Supt* ....Detroit, Mich.
Allan Bourn, *Pur. Agt* ....Detroit, Mich.
S. H. Edgerly, *Gen. M. M* ....Jackson, Mich.
(1) Lines West of Detroit River:
E. C. Brown, *Gen. Supt* ....Detroit, Mich.
East. Div.: D. S. Sutherland, *Supt.* Detroit, Mich.
Bay City, Saginaw & Mackinaw Divisions.:
W. A. Vaughan, *Supt* ....Bay City, Mich.
C. E. Smart, *M. M* ....Bay City, Mich.
Main Line; Gr. Rap.; So. Bend; and So. Hav. Divs.:
C. B. Bush, *Supt* ....Jackson, Mich.
W'n Divs.: R. H. L'Hommedieu, *Supt.* Chicago, Ill.
(2) Lines East of Detroit River:
J. E. Morford, *Supt.* ....St. Thomas, Ont.
A. Bull, *M. M* ....St. Thomas, Ont.
Rob't Potts, *M. C. B.* ....St. Thomas, Ont.
Michigan & Ohio.
Luther Allen, *Supt* ....Toledo, O.
W. L. Webb, *Pur. Agt* ....Toledo, O.
D. J. Durrell, *M. M* ....Marshall, Mich.
Middleburg & Schoharie: and
Schoharie Valley R. Rs. 4-8½ g. 11 m. 2 lo. 6 cars.
P. S. Danforth, *Gen. Supt* ....Middleburg, N. Y.
Midland of Canada. (*See Grand Trunk.*)
Midland No. Carolina Ry. 5 g. 95 m. 9 lo. 82 cars.
Atlantic & North Carolina Ry. 22 m.
John D. Whitford, *Gen. Man* ..Newbern, N. C.
J. A. Bryan, *Supt* ....Newbern, N. C.
D. J. Sprague, *Pur. Agt* ....New York, N. Y.
B. Manly, *Supt. of Mach* ....Newbern, N. C.
Milford & Woonsocket.
W. W. Jencks, *Supt* ....Milford, Mass.
Milton & Sutherlin. (*Oper. by Rich. & Danville.*)
Milwaukee, Lake Shore & Western Ry.
4-8½ g. 370 m. 45 lo. 1,536 cars.
H. G. H. Reed, *Gen. Supt* ....Milwaukee, Wis.
J. Donahue, *Supt* ....Milwaukee, Wis.
John Hickey, *M. M* ....Ledyard, Wis.
Milwaukee & Northern and Wisconsin & Michigan R. Rds. 4-8½ g. 228 m. 24 l. 703 cars.
C. F. Dutton, *Gen. Supt* ....Milwaukee, Wis.
N. S. Kimball, *M. M* ....Ft. Howard, Wis.
Mineral Range R. R. 3 g. 13 m. 4 lo. 43 cars.
Chas. E. Holland, *Pr. & Supt* ....Hancock, Mich.
W. H. Carr, *Pur. Agt* ....Hancock, Mich.
T. J. Shellhorn, *M. M. & C. B.* Hancock, Mich.
Minneapolis, Lyndale & Minnetonka Ry.
3 g. 25 miles 4 motors 1 lo. 35 cars.
William McCrory, *Man* ....Minneapolis, Minn.
T. W. Heintzelman, *M. M* Minneapolis, Minn.
Minneapolis, S. Ste. Marie & Atlantic Ry.
4-8½ g. 45 m.
W. . . Rich, *Supt* ....Minneapolis, Minn.
Missisquoi R. R. 4-8 g. 28 m.
W. C. Smith, *Man* ....St. Albans, Vt.
Mississippi, Terre Aux Boeufs & Lake R. R.
29 miles.
M. R. Spelman, *Supt* ....New Orleans, La.
Mississippi & Tenn. R. R. 4-8½ g. 101 m. 12 lo. 194 c.
M. Burke, *Gen. Supt* ....Memphis, Tenn.
J. C. Ramsey, *M. M* ....Memphis, Tenn.
S. J. Bolton, *M. C. B* ....Memphis, Tenn.
Missouri, Kansas & Texas Ry. (*See Mo. Pac.; (2) Div.*)
Missouri Pacific Ry. (Leased and operated lines.)
4-8½ g. 6,029 m. 697 lo. 19,748 cars.
H. M. Hoxie, *3d V. Pres* ....St. Louis, Mo.
R. B. Lyle, *Pur. Agt* ....St. Louis, Mo.
(1), (2) and (3) Divs.:
John Hewitt, *Supt. M. P. & M.* ..St. Louis, Mo.
John Hodge, *Supt. Car Dep* ....St. Louis, Mo.
Frank Howard, *Asst. Supt. C. D.* ..Marshall, Tex.
(4), (5) and (6) Divs.:
O. A. Haynes, *S. M. P. & M.* .. Marshall, Tex.
(1) Missouri Pacific Ry. 1,028 m. 155 lo. 4,218 cars.
A. M. Hagar, *Supt* ....Sedalia, Mo.
E. Taylor, *M. M* ....Sedalia, Mo.
W'n Div.: A. M. Hagar, *Supt* ....Sedalia, Mo.
(2) Mo., Kan. & Tex. Ry. 1,308 m. 140 lo. 4,248 cars.
S. Irvin, *Asst. Supt. Car Dep* ....Sedalia, Mo.
J. B. Vandyne, *Supt.* ....Parsons, Kan.
J. W. Haines, *M. M* ....Parsons, Kan.
(3) Central Branch Un. Pac. R. R. 388 m. 30 lo. 599 c.
W. W. Fagan, *Supt* ....Atchison, Kan.
H. V. Faries, *M. M* ....Atchison, Kan.
J. W. Blackburn, *A. Supt. Car D.* Atchison, Kan.
(4) St. L., I. Mt. & So'n Ry. 905 m. 138 lo. 4,928 c.
Wm. Kerrigan, *Supt* ....St. Louis, Mo.
St. Louis Div.: W. H. Harris, *M. M.* De Soto, Mo.
Ark. Div.: *Supt* ....Little Rock, Ark.
R. M. Richardson, *M. M* ....Little Rock, Ark.
(5) Int. & G. No.: John Herrin, *Supt* ..Palestine, Tex.
W. S. Morris, *M. M* ....Palestine, Tex.
(6) Tex. & Pac.: *Supt* ....Marshall, Tex.
E. N. O. & Tr. Cont. Divs.:
Geo. Dimick, *Supt* ....Marshall, Tex.
E. A. Haggerty, *M. M* ....Marshall, Tex.
E. R. Smith, *M. M. & M. C. B* ..N. Orleans, La.
Rio Grande Div.:
L. L. Keller, *Supt* ....Big Springs, Tex.
J. K. Lape, *M. M* ....Big Springs, Tex.
Mobile & Ala. Grand Trunk R. R. 5 g. 59 m. 2 lo. 23 c.
Wm. H. Pratt, *Trustee* ....Mobile, Ala.
Mobile & Girard R. R. 5 g. 84 m. 7 lo. 112 cars.
W. L. Clark, *Gen. Supt* ....Columbus, Ga.
J. C. Albrecht, *M. M* ....Columbus, Ga.
A. J. Nix, *M. C. B* ....Columbus, Ga.
Mobile & Montgomery Ry. (*See Louis. & Nash.*)
Mobile & Northwestern R. R. 3 g. 31 m. 2 lo. 16 c.
Thomas T. A. Lyon, *Pres* ....Glendale, Miss.
Mobile & Ohio R. R. 5 g. 528 m. 75 lo. 1,353 cars.
T. M. R. Talcott, *V.-Pr. & Gen. Man* Mobile, Ala.
J. G. Motley, *Gen. Supt* ....Mobile, Ala.
F. Jordan, *Pur. Agt* ....Mobile, Ala.
M. T. Carson, *Gen. M. M* ....Whistler, Ala.
J. T. Booth, *M. C. B* ....Whistler, Ala.
So'n Div.: J. G. Motley, *Supt* ...., Mobile, Ala.
L. J. Morris, *M. M* ....Macon, Miss.
No'n Div.: E. S. Hosford, *Supt* .. Jackson, Tenn.
H. C. Goode, *M. M* ....Jackson, Tenn.
Mobile & Spring Hill R. R. 5-2 g. 8 m. 1 lo. 16 cars.
F. Ingate, *Manager* ....Mobile, Ala.
Moline & Southeastern R. R. 3-6 g. 8 m. 2 lo. 26 c.
R. Battersly, *Gen. Man* ....Coal Valley, Ill.
Mont Alto R. R. 4-9 g. 21 m. 2 lo. 8 cars.
G. B. Wiestling, *Supt. & P. A* ....Mont Alto, Pa.
Montgomery & Eufaula Ry. (*See Cen. of Ga.*)
Montgomery Southern Ry. 3 g. 20 m. 1 lo. 15 cars.
S. D. Hubbard, Jr., *Gen. Man.* Montgomery, Ala.
Montour R. R. 4-8½ g. 12 m. 2 lo. 130 cars.
C. R. Brown, *Supt. & Pur. Agt* ...Imperial, Pa.
Henry Newman, *M. C. B* ....Imperial, Pa.
Montpelier & Wells Riv. R. R. 4-8½ g. 38 m. 3 lo. 86 c.
W. A. Stowell, *Supt* ....Montpelier, Vt.
Montreal Portland & Boston Ry. (*See Passumpsic.*)
Montreal & Sorel Ry. 4-8½ g. 47 m. 3 lo. 35 c.
C. N. Armstrong, *G. M. & Pur. Agt.* Sorel, Que.
J. F. Armstrong, *Gen. Supt* ....Sorel, Que.
G. W. Pangborn, *M. M* ....Sorel, Que.
Montrose Ry. 3 g. 28 m. 3 lo. 24 cars.
T. G. Walter, *Gen. Supt* ... Tunkhannock, Pa.
Morgan's Louis. & Tex. R. R. 4-8½ g. 260 m. 46 l. 1,339 c.
J. Kruttschnitt, *Supt* ....New Orleans, La.
C. Trumpy, *Pur. Agt.* ....New Orleans, La.
J. D. Connell, *M. M* ....Algiers, La.
Jno. Hildebrand, *M. C. B* ....Algiers, La.
Mount Washington R. R. 5-3 g. 3 m. 6 lo. 6 cars.
Walter Aiken, *Gen. Man* ....Franklin, N. H.
Muncy Creek Ry. (*See Wmspt. & No. Br.*)

N

Nantasket Beach R. R. 4-8½ g. 6 m. 5 lo. 25 c.
George L. Keyes, *Gen. Supt* ....Boston, Mass.
Naugatuck R. R. 4-8½ g. 62 m. 17 lo. 547 cars.
Geo. W. Beach, *Supt* ....Waterbury, Conn.
H. A. Bishop, *Pur. Agt* ....Bridgeport, Conn.
H'y D. Beach, *Supt. R. S* ....Bridgeport, Conn.
Napanee, Tamworth & Quebec Ry. In progress.
Ed. W. Rathbun, *Man. Dir* ....Deseronto, Ont.
R. C. Carter, *Supt* ....Deseronto, Ont.
Narragansett Pier R. R. 4-8½ g. 8 m. 2 lo. 11 c.
G. T. Lanphear, *Supt. & Pur. Agt.* Peacedale, R. I.
Nashua & Rochester R. R. (*See Wor. & Nash.*)
Nashville, Chattanooga & St. Louis Ry.
5 g. 539 miles 87 lo. 1,979 cars.
J. W. Thomas, *G. Man. & P. Agt.* Nashville, Tenn.
M. J. C. Wrenne, *Supt* ....Nashville, Tenn.
James Cullen, *M. M. & C. B* ...Nashville, Tenn.
Nashville & Florence R. R. 5 g. 51 m.
J. Geddes, *Supt* ....Columbia, Tenn.
Natchez, Jackson & Col. R. R. 3-6 g. 100 m. 7 lo. 92 c.
E. D. Frost, *Gen. Supt* .... Natchez, Miss.
National Car Company. 4,000 freight cars.
L. Millis, *Pres* ....Boston, Mass.
F. Stewart Stranahan, *Sec. & Tr.* St. Albans, Vt.
John B. Fletcher, *Supt* ....St. Albans, Vt.
Nebraska, Topeka, Iola & Memphis R.R. 4-8½ g. 16 m.
H. M. Clarke, *Gen. Man* ....Girard, Kan.
C. H. Malin, *Gen. Supt* ....Girard, Kan.
New Brunswick Ry. 4-8½ g. 419 m. 20 lo. 357 cars.
E. R. Burpee, *Gen. Man* ....Woodstock, N. B.
Jesse Mathews, *M. M* ....Gibson, N. B.
T. N. Burpee, *M. C. B* ....McAdam Junc., N. B.
J. J. Seely, *Pur. Agt* ....Woodstock, N. B.
Thos. Armstrong, *M. M* .... St. Andrew's, N. B.
G. Houlton, *M. C. B* ....St. Andrew's, N. B.
New Brunswick & Can. Ry. (*See New Brun.*)
Newburg, Dutchess & Conn. R. R. 4-8½ g. 58 m.
C. L. Kimball, *Supt. & P. Agt.* Matteawan, N. Y.
New Castle R. R. 3-6 g. 5 m. 2 lo. 76 cars.
Geo. Pearson, *Gen. Man* ....New Castle, Pa.
New Castle & Beaver Valley R. R. (*See Penna. Co.*)
New Haven & Derby R. R. 4-8½ g. 13 m. 4 lo. 70 c.
E. S. Quintard, *Supt* ....New Haven, Conn.
J. M. Whitlock, *M. M. & C. B.* New Haven, Conn.
New Haven & No'mpton. 4-8½ g. 170 m. 28 lo. 579 c.
S. B. Opdyke, Jr., *Supt* ....New Haven, Ct.
R. G. Curtis, *Pur. Agt* ....New Haven, Ct.
Henry Fox, *M. M* ....New Haven, Ct.
John Sweeny, *For. Car. Shps* ...New Haven, Ct.
New Jersey & New York Ry. 4-8½ g. 37 m. 6 lo. 40 c.
J. D. Hasbrouck, *Gen. Man* Jersey City, N. J.
J. S. Drake, *Supt. & M. M* ....Hillsdale, N. J.
L. B. Van Wagonen, *M. C. B* ....Hillsdale, N. J.
N. J. Southern Ry. (*See Phil. & Read.; N. J. So. Div.*)
New London Northern R. R. (*See Central Ver.*)
New Orleans, B. Rouge, Vicks. & Memphis.
Jas. M. Edwards, *Gen. Man* ..New Orleans, La.
John Bradley, *Supt* ....New Orleans, La.
New Orleans Pacific Ry. (*See Mo. Pac.; (6) Div.*)
New Orleans & Carrollton R. R.
4-8½ g. 15 m. 12 lo. 79 cars.
C. V. Haile, *Supt* ....New Orleans, La.
John Dahmer, *M. M* ....New Orleans, La.
Jas. Thorn, *M. C. B* ....New Orleans, La.
New Orleans & Mobile R. R. (*See Louis. & Nash.*)
N. O. & Northeastern R. R. (*See Cin., N. O. & Tex. Pac.*)
New Orleans & Selma R. R. 5 g. 21 m. 1 lo. 8 cars.
L. B. Schofield, *Supt* ....Selma, Ala.
Newport & Wickford R. R. 4-8½ g. 22 m.
Theo. Warren, *Supt* ....Newport, R. I.
Nevada Central R. R. (*See Union Pac.; (7) Div.*)
Nevada County N. G. R. R. 3 g. 23 m. 3 lo. 46 cars.
John F. Kidder, *Supt* ....Grass Valley, Cal.
Jas. McCormick, *M. M. & C. B.* Grass Valley, Cal.
Nevada & Oregon R. R. 3 g. 30 m. 25 cars.
D. W. Balch, *Supt* ....Reno, Nev.
N. Y. Central & Hudson River R.R.
4-8½ g. 983 m. 676 lo. 25,161 cars.
J. M. Toucey, *Gen. Supt* .... New York, N. Y.
Chas. Reed, *Pur. Agt* .... New York, N. Y.
Wm. Buchanan, *Supt. M. P. and R. Stock,* New York, N. Y.
N. Y. & Har. Div.: C. M. Bissell, *Supt.* do.
P. McQ. Gibson, *M. M* ....New York, N. Y.
Hud. Riv. Div.: C. M. Bissell, *Supt.* N. York, N. Y.
W. H. Wolfrath, *M. C. B* ....New York, N. Y.
E'n Div.: Zenas C. Priest, *Supt.* Ltle Falls, N. Y.
John Ortton, *M. M* ....West Albany, N. Y.
L. Packard, *M. C. B* ....West Albany, N. Y.
W'n Div.: Geo. H. Burrows, *Supt* ..Buffalo, N. Y.
S. L. White, *M. M* ....Syracuse, N. Y.
Amos Gould, *M. M* ....E. Buffalo, N. Y.
E. Chamberlain, *M. C. B* ... E. Buffalo, N. Y.
Peter Smith, *M. C. B* .... E. Rochester, N. Y.
Rd. Donaby, *M. C. B* ....Niagara Falls, N. Y.
N. Y. Chic. & St. L. Ry. 4-8½ g. 513 m. 115 lo. 4,838 c.
Lewis Williams, *Gen. Man* .... Cleveland, O.
Jno. Mackenzie, *Supt. M. P.* ....Cleveland, O.
Eas'tn Div.: G. H. Kimball, *Supt* ...Cleveland, O.
E. A. Miller, *M. M* ....Conneaut, O.
West'n Div.: A. H. Evans, *Supt* ....Chicago, Ill.
Jas. Eckford, *M. M* ....Bellevue, O.
New York City & Northern. 4-8½ g. 58 m. 17 lo. 368 c.
Frank S. Gannon, *Gen. Supt.* High Bridge, N. Y.
Thos. Millen, *M. M* ....High Bridge, N. Y.
New York, Lackawanna & W'n Ry. (*See Del. L. & W.*)
New York, Lake Erie & Western R. R.
S. M. Felton, Jr., *V. Pr* .... New York, N. Y.
(1) N. Y., L. E. & W. Div.: 4-8½ g. 1,073 m. 576 lo. 30,553 c.
B. Thomas, *Gen. Supt* ....Jersey City, N. J.
W. G. Fuller, *Pur. Agt* ....New York, N. Y.
F. M. Wilder, *Supt. M. P. & M* ...Susqueh'a, Pa.
E'n Div.: E. O. Hill, *Supt* ....Jersey City, N. J.
J. H. Vreeland, *M. M* .... Jersey City, N. J.
J. N. Mileham, *M. C. B* ....Jersey City, N. J.
Del. Div.: E. Van Etten, *Supt* ..Port Jervis, N. Y.
J. Van Vechten, *M. M. & C. B.* Pt. Jervis, N. Y.
Susq. Div.: J. Jolls, *Act. Supt* ....Elmira, N. Y.
V. Blackburn, *M. M* ....Susquehanna, Pa.
D. B. Goodell, *M. C. B* ....Elmira, N. Y.
Buf. & R. Divs.: W. J. Murphy, *Supt.*; and
G. B. Ross, *M. M* ....Buffalo, N. Y.
M. Wilder, *M. C. B* ....Buffalo, N. Y.
B. & S.-W. Div.: C. A. Brunn, *Supt.* do.
W'n Div.: W. B. Coffin, *Supt* ..Hornellsville, N. Y.
J. Hawthorne, *M. M* ....Hornellsville, N. Y.
N. Y. & Greenwood L. Ry. 4-8½ g. 44 m. 8 lo. 53 c.
Stephen Smith, *Supt* ....Jersey City, N. J.
F. A. Stinard, *M. M* ....Pompton, N. J.
(2) N. Y., Pa & O. Div.: 4-8½ g. 565 m. 221 lo. 7,794 c.
Chas. Paine, *Gen. Supt* ....Cleveland, Ohio.
J. H. Hoiway, *Pur. Agt* ....Cleveland, Ohio.
Wm. Fuller, *Supt. M. P* ....Cleveland, O.
S. V. Smith, *Asst. Gen. M. C. B.* ...Kent, Ohio.
E'n Div.: A. L. Dunbar, *Supt* ....Meadville, Pa.
J. A. Cooper, *M. M* ....Meadville, Pa.
D. S. Dockstader, *M. C. Rep* ...Meadville, Pa.
W'n Div.: T. A. Phillips, *Supt* .... Galion, O.
Wm Hill, *M. M* ....Galion, O.
Geo. Wilson, *For. Car Rep* ....Galion, Ohio.
Maho'g Div.: N. F. Wood, *Supt* ....Cleveland, O.
N. Wright, *M. M* ....Cleveland, O.
C. N. Thorp, *M. C. Rep* ....Cleveland, O.
New York, New Haven & Hartford R. R.
4-8½ g. 203 m. 123 lo. 2,768 cars.
E. M. Reed, *V. P. & Gen. Supt.* New Haven, Ct.
R. N. Dowd, *Pur. Agt* ....New Haven, Ct.
John Henney, Jr., *Supt. M. P.* ..New Haven, Ct.
N. Y. & N. H. Div.: W. H. Stevenson, *Supt* .. N. Y.
Shore Line and Air Line Divs.:
O. M. Shepard, *Supt* .... N. Haven, Ct.
Jas. Denver, *M. C. B* ....New Haven, Ct.
Hart. Div.: C. S. Davidson, *Supt* ....Hartford, Ct.
O. C. Lackey, *M. M* ....Hartford, Ct.
Jno. Whitmore, *For. C. Dept* ...Hartford, Ct.
N. Y., Ontario & Western Ry. (*See N. Y., W. Sh. & Buf.*)
N. Y., Pittsb'h & Chicago. 4-8½ g. 20 m. 2 lo. 32 c.
Geo. W. Dixon, *Supt* ....New Galilee, Pa.
H. T. Hanna, *Pur. Agt* ....Pittsburgh, Pa.
N. Y., Pennsylvania & Ohio R. R. (*See N. Y., L. E. & W.*)
New York, Philadelphia & Norfolk R. R.
4-8½ g. 10 m. 1 lo. 4 cars.
Jas McConkey, *Supt* ....Princess Ann, Md.
New York, Providence & Boston R. R.
4-8½ g. 83 m. 29 lo. 430 cars.
J. B. Gardner, *Supt* ....Providence, R. I.
Giles F. Ward, *Pur. Agt* ....Stonington, Conn.
Geo. H. Griggs *M. M. & C. B.* .Providence, R. I.
N. Y., Susqueh'na & W'n. 4-9 g. 147 m. 33 lo. 1,469 c.
F. A. Potts, *Gen. Man* ....New York, N. Y.
C. D. McKelvey, *Supt* ....Jersey City, N. J.
C. T. Demarest, *Pur. Agt* ....New York, N. Y.
W. C. Ennis, *M. M. & C. B* ...Wortendyke, N. J.
New York, Texas & Mexican Ry.
4-8½ g. 92 m. 6 lo. 95 cars.
Allen McCoy, *Gen. Man* ....Victoria, Tex.
J. G. Conlon, *M. M* ....Victoria, Tex.
New York, West Shore & Buffalo.
4-8½ g. 850 m. 98 lo. 2,907 c.
J. D. Layng, *Gen. Man* ....New York, N. Y.
C. D. Gorham, *Gen. Supt* ....Weehawken, N. J.
P. S. Bemis, *Pur. Agt* ....New York, N. Y.
R. H. Soule, *Supt. M. P.* ....Frankfort, N. Y.
T. W. Fredericks, *Asst. S. M. P.* Frankfort, N. Y.
H. R. Div.: C. W. Bradley, *Supt.*, Weehawken, N. J.
Harry Linn, *M. M* New Durham, N. J.
Moh'k Div.: H. W. Gardiner, *Supt.* Syracuse, N. Y.
Buff. Div.: D. B. McCoy, *Supt* ....Buffalo, N. Y.
New York, Ontario & Western.
J. E. Childs, *Gen. Supt* ....New York, N. Y.
N. Y. Woodhaven & Rockaway R. R. (*See Long Is.*)
N. Y. & Greenwood Lake Ry. (*See N. Y., L. E. & W.*)
N. Y. & Manhattan Beach Ry. (*See Long Island.*)
New York & Long Branch R. R. (*See Phil. & Read.*)
New York & New England R. R.
4-8½ g. 473 m. 145 lo. 3,959 cars.
W. H. Turner, *Gen. Supt* .... Boston, Mass.
W. W. McKim, *Pur. Agt* .... Boston, Mass.
J. B. Henney, *Supt. M. P.* .... Boston, Mass.
Geo. E. Boyden, *M. M* ....Norwood, Mass.
Elias E. Pratt, *M. C. B* .... Norwood, Mass.
East Div: E. G. Allen, *Supt* ....Boston, Mass.
Nor. Div.: P. St. M. Andrews, *Supt* ...Norwich, Ct.
, *M. M* ....Norwich, Ct.
Prov. Div.: L. W. Palmer, *Supt.* Providence, R. I.
Hfd. Div.: E. Holbrook, *Supt* ....Hartford, Ct.
E. M. Humstone, *M. M* ....Hartford, Ct.
West'n Div.: C. H. Platt, *Supt* ....Fishkill, N. Y.
Woons'kt Div.:
E. N. Tucker, *Supt* ....Needham, Mass.
New York & Sea Beach R. R. 4-8½ g. 6 m. 6 lo. 41 c.
W. O. McDowell, *Gen. Man* ... New York, N. Y.
C. W. Douglass, *Gen. Supt* ...Bay Ridge, N. Y.
Newark, Somerset & Straitsville R. R. (*See B. & O.*)
Newburg, Dutchess & Conn. R. R. 4-8½ g. 59 miles.
C. L. Kimball, *Gen. Supt* ....Matteawan, N. Y.
W. G. Van Buskirk, *M. M. & C. B.,* Dutchess Junction, N. Y.
Newfoundland Ry. 3-6 g. 45 m. 7 lo. 41 c.
C. X. Hobbs, *Gen. Man* ....St. John's, N'f'd.
Norfolk Southern R. R. 4-8½ g. 74 m. 7 lo. 182 c.
M. K. King, *Gen. Man. & Pur. Agt.* Norfolk, Va.
J. S. Whitworth, *M. M. & C. B* ....Norfolk, Va.
Norfolk & Ocean View R. R. & Hotel Co.
3 g. 8 m. 2 lo. 9 cars.
W. H. Taylor, *Pres* ....Norfolk, Va.
Norfolk & Va. Beach R. R. 3 g. 18 m.
J. M. Dickey, *Gen. Man* ....Norfolk, Va.
Norfolk & Western R. R. (*See Shenandoah Val.*)
North-Eastern R. R. of Ga. 5 g. 72 m. 2 lo. 20 cars.
H. R. Bernard, *Supt* ....Athens, Ga.
North-Eastern R. R. (S. C.) (*See Wil. & Wel.*)
North Pacific Coast R. R. 3 g. 84 m. 12 lo. 320 cars.
Gen. Supt ....San Rafael, Cal.
W. F. Russell, *Pur. Agt* ....San Francisco, Cal.
E. L. Reese, *M. M* .... Saucelito, Cal.
North Shore Ry. 4-8½ g. 200 m. 21 lo. 564 c.
W. Wainwright, *Gen. Man* ....Montreal, Can.
A. Davis, *Supt. & Pur. Agt* ....Quebec, Can.
Northern (N. H.), and Concord & Claremont Rys.
4-8½ g. 173 m. 25 lo. 509 cars.
Geo. E. Todd, *Supt* ....Concord, N. H.
M. M. & C. B. & Pur. Agt .. do.
Northern (N. J.) R. R. (*See N. Y., L. E. & W'n.*)

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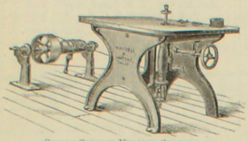
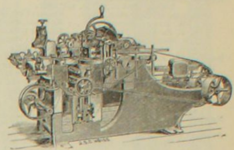
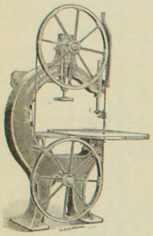


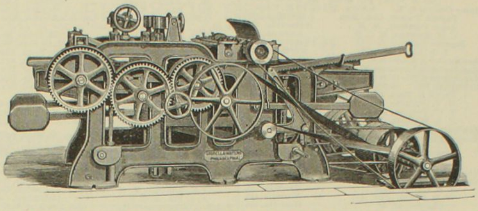
SINGLE SPINDLE UPRIGHT SHAPER.



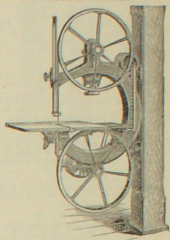
SEVEN-INCH FOUR-SIDED MOLDER.



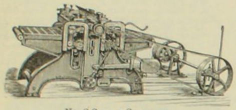
35-INCH BAND SAW.



CAR SILL PLANER AND DOUBLE-SURFACER AND JOINTER.



BRACKET BAND SAW.



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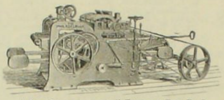

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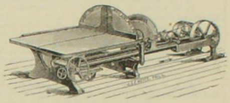
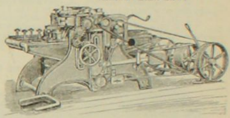


NEW RAILWAY CUT-OFF SAW.



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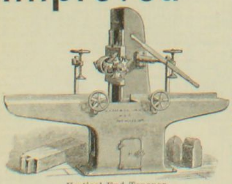
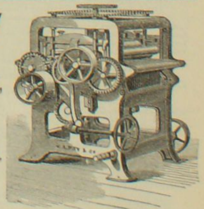


Vertical End Tenoner.



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Northern Central Ry. (*See Penna. R. R.* (6) *Div.*)
North'n Pacific R. R. 4-8½ g. 2,207 m. 391 lo. 9,897 c.
T. F. Oakes, *Gen. Man.* ..... St. Paul, Minn.
John H. Ames, *Gen. Pur. Agt.* .. St. Paul, Minn.
Geo. W. Cushing, *Supt. M. P., M. & R. S.* do.
J. C. Barber, *M. C. B.* ..... Brainerd, Minn.
(1) E'n Div.: J. T. Odell, *A. Gen. Man.* St. Paul, Minn.
H. J. Small, *A. S. Mach.* ..... Brainerd, Minn.
1st Gr. Div.: M. C. Kimberly, *Supt.* Brainerd, Minn.
M. C. B. ..... Brainerd, Minn.
2d Gr. Div.: J. M. Graham, *Supt.* Jamestown, Dak.
C. C. Quinn, *M. M.* ..... Fargo, Dak.
A. Bardsley, *M. M.* ..... Mandan, Dak.
F. Greene, *A. Supt.* ..... Mandan, Dak.
3d Gr. Div.: S. R. Ainslie, *Supt.* .. Glendive, Mont.
S. L. Bean, *M. M.* ..... Glendive, Mont.
J. C. Munro, *M. M.* ..... Livingston, Mont.
(2) W'n Div.: J. M. Buckley, *Asst. Gen. Man.*
New Tacoma, W. T.
H. D. Sanborn, *P. Agt.* ..... Portland, Ore.
W. T. Small, *A. S. Mach.* ..... Portland, Ore.
4th Gr. Div.: J. B. Cable, *Supt.* ... Missoula, Mont.
F. P. Weymouth, *Supt.* ..... Sprague, W. T.
Wm. Garlock, *M. M.* ..... Missoula, Mont.
J. Evans, *M. M.* ..... Sprague, W. T.
5th Gr. Div.: Otis Sprague, *Supt.* ... Tacoma, W. T.
H. H. Warner, *M. M.* ..... Tacoma, W. T.
Northern & North-W'n Rys. 4-8½ g. 378m. 50 lo. 1,195 c.
James Webster, *Supt.* ..... Toronto, Can.
W. C. Schreeber, *Pur. Agt.* ..... Toronto, Can.
P. Clarke, *M. M.* ..... Toronto, Can.
Northern & Western Ry. 4-8½ g. 50 m.
J. B. Snowball, *Man.* ..... Chatham, N. B.
Nova Scotia Ry. 4-8½ g. 79 m. 9 lo. 268 c.
C. A. Scott, *Gen. Man.* ..... New Glasgow, N. S.
M. F. Punch, *M. M.* ..... New Glasgow, N. S.

O

Ogdensburg & Lake Champlain R. R.
4-8½ g. 130 m. 33 lo. 1,694 cars.
A. A. Gaddis, *Gen. Man.* ..... Ogdensburg, N. Y.
E. B. Burnham, *Pur. Agt.* ... Ogdensburg, N. Y.
Abr. Klohs, *M. M.* ..... Malone, N. Y.
H. S. Leach, *Master Builder.* Ogdensburg, N. Y.
Ohio Central R. R. 4-8½ g. 325 m. 46 lo. 4,760 cars.
John E. Martin, *Rec.* ..... Toledo, O.
T. M. Peelar, *Supt.* ..... Bucyrus, O.
F. W. Stewart, *Pur. Agt.* ..... Toledo, O.
J. B. Morgan, *M. M. & C. B.* ..... Bucyrus, O.
Ohio River R. R. 4-9 g. (in progress).
C. L. Williams, *Asst. Supt.* Parkersburg, W. Va.
S. Litchworth, *M. M.* ..... Parkersburg, W. Va.
Ohio Southern R. R.:
W. H. Van Tassel, *Supt.* ..... Springfield, O.
A. J. Sanborn, *M. M.* ..... Springfield, O.
Ohio & Mississippi Ry. 4-9 g. 616 m. 113 lo. 2,501 cars.
W. W. Peabody, *Pres. & Gen. Man.* Cincinnati, O.
G. E. Atwood, *Pur. Agt.* ..... Cincinnati, O.
J. H. Setchel, *Gen. M. M.* ..... Cincinnati, O.
Cin. Div.: C. B. Cole, *Supt.* ..... Seymour, Ind.
J. P. Coulter, *Gen. M. C. B.* ..... Aurora, Ind.
E. E. Jenks, *A. Gen. For.* ..... Seymour, Ind.
W. L. Hoffecker, *M. M.* ..... Vincennes, Ind.
A. N. Bradley, *M. C. B.* ..... Cochran, Ind.
St. L. & Sp. Div.: C. M. Stanton, *Supt.* St. Louis, Mo.
J. W. Stokes, *M. M.* (Spring. Div.) .. Pana, Ill.
Louisv. Div.: C. B. Cole, *Supt.* ..... Louisville, Ky.
Oil City & Chicago R. R. (*See Buff., N. Y. & Phil.*)
Old Colony R. R. 4-8½ g. 470 m. 124 lo. 3,327 cars.
J. R. Kendrick, *Gen. Man.* ..... Boston, Mass.
R. W. Husted, *Pur. Agt.* ..... Boston, Mass.
Jas. N. Lauder, *Supt. R. S.* ..... Boston, Mass.
Sam. Stevens, *S. Br. & Bld'gs.* ... Boston, Mass.
Main Li. Div.: J. H. French, *Supt.* ... Boston, Mass.
F. M. Twombly, *M. M.* ..... Boston, Mass.
Cape Cod Div.: C. H. Nye, *Supt.* .. Hyannis, Mass.
F. M. Twombly, *M. M.* ..... Boston, Mass.
No. Div.: S. A. Webber, *Supt.* ... Fitchburg, Mass.
A. W. Twombly, *M. M.* ..... Taunton, Mass.
Olympia & Chehalis Val. R. R. 3 g. 15 m.
Otis Sprague, *Supt.* ..... Olympia, W. T.
Oregon Ry. & Navigation Co.
3 & 4-8½ g. 807 m. 72 lo. 1,611 cars.
C. H. Prescott, *V. P. & Gen. Man.* Portland, Ore.
F. T. Dodge, *Supt.* (Riv. Div.) ... Portland, Ore.
H. S. Rowe, *Supt.* (Ry Div.) ..... Portland, Ore.
J. M. Drake, *Pur. Agt.* ..... Portland, Ore.
Goodall, Perkins & Co., *Supt.* (Ocean Div.)
San Francisco, Cal.
C. C. Hobart, *Gen. M. M.* ..... The Dalles, Ore.
P. Carlsen, *M. C. B.* ..... The Dalles, Ore.
Oregon & California R. R. 4-8½ g. 449 m. 43 lo. 626 c.
R. Koehler, *Man.* ..... Portland, Ore.
J. Brandt, *Gen. Supt.* ..... Portland, Ore.
W. T. Bodley, *Pur. Agt.* ..... Portland, Ore.
A. Brandt, *M. M.* ..... Portland, Ore.
Ottumwa & Kirkville Ry. 4-8½ g. 13 m.
J. A. Kebler, *Supt.* ..... Ottumwa, Ia.
Owensboro & Nashville R. R. 5 g. 44 m. 3 lo. 70 c.
W. M. Newbold, *Supt.* ..... Owensboro, Ky.
J. T. Edwards, *M. M. & C. B.* Owensboro, Ky.
Oxford & Henderson R. R. 4-8½ g. 13 m. 2 lo. 11 c.
James A. White, *Gen. Supt.* ... Henderson, N. C.
James E. Lawrence, *M. M.* ... Henderson, N. C.

P

Pacific Coast Ry. 3 g. 64 m.
J. M. Fillmore, *Manager.* San Luis Obispo, Cal.
John Walch, *M. M. & C. B.* do.
Painesville & Youngstown Ry. 3 g. 65 m. 7 lo. 319 c.
R. K. Paige, *Rec. & Man.* ..... Painesville, O.
J. A. Newcome, *Supt. R. S.* ..... Painesville, O.
Panama R. R. 5 g. 48 m. 14 lo. 2,200 cars.
G. A. Burt, *Gen. Supt.* ..... Aspinwall, U. S. Col.
E. Z. Penfield, *Pur. Agt.* ..... New York, N. Y.
Jas. Reilly, *M. M.* ..... Aspinwall, U. S. Col.
Passumpsic R. R. 4-8½ g. 147 m. 28 lo. 1,101 cars.
E. Raymond, *Pres. & Pur. Agt.* Boston, Mass.
H. E. Folsom, *Supt.* ..... Lyndonville, Vt.
L. L. Brigham, *M. M.* ..... Lyndonville, Vt.
L. F. Woodard, *M. C. B.* ..... Lyndonville, Vt.
Paw Paw and Toledo & South Haven R. Rds.
3 g. 20 m. 3 lo. 16 cars.
John Ihling, *Supt.* ..... Lawton, Mich.
Peach Bottom R. R. 3 g. 55 m. 6 lo. 52 cars.
B. B. Newton, *Supt. & Pur. Agt.* ... Oxford, Pa.
E. H. Williams, *M. C. B.* ..... York, Pa.
W. P. Kirk, *M. M.* ..... Oxford, Pa.
Pemigewasset Valley R. R. 4-8½ g. 21 m. 2 lo. 127c.
J. Thomas Vose, *Pres.* ..... Boston, Mass.
Pennsylvania Co.'s (5) Roads.
4-9 g. 3,222 m. 920 lo. 32,809 cars.
Gen. Divs. (1), (2), (3), (4) and (5).
Wm. A. Baldwin, *Gen. Man.* ..... Pittsburg, Pa.
John Thomas, *Gen. Supt.* ..... Pittsburg, Pa.
Wm. Mullins, *Gen. Pur. Agt.* ..... Pittsburg, Pa.
Joseph Wood, *Supt. M. P.* ..... Fort Wayne, Ind.
(1) Pittsburgh, Ft. Wayne & Chicago Ry.
4-9 g. 468 m. 288 lo. 8,023 cars.
E'n Div.: A. B. Starr, *Supt.* ..... Allegheny, Pa.
Geo. J. Parkin, *M. M.* ..... Allegheny, Pa.
D. M. Peppard, *M. M.* ..... Crestline, O.
W'n Div.: C. D. Law, *Supt.* ..... Ft. Wayne, Ind.
F. D. Casanave, *M. M.* ..... Ft. Wayne, Ind.
A. H. Somers, *Gen. For. Shops* ... Chicago, Ill.
(2) Ashtabula & Pittsburgh, and
(3) Erie & Pittsburg R. Rds. 221 m. 29 lo. 1,362 c.
John M. Kimball, *Supt.* Lawrence Junc., Pa.
J. A. Wood, *Gen. For. Shops* ..... Erie, Pa.
(4) Cleveland & Pittsb'g R. R. 225 m. 97 lo. 3,534 c.
R. F. Smith, *Asst. Man.* ..... Cleveland, O.
Philip Bruner, *Supt.* ..... Wellsville, O.
W. F. Beardsley, *Mast. of Mach.* Wellsville, O.
(5) No-W'n Ohio Ry.: J. S. Morris, *Supt.* .. Toledo, O.
Pennsylvania R. R. Co.'s Roads. (7 Gen. Divs.)
4-9 g. 3,158 m. 1,459 loco. 66,816 cars.
Chas. E. Pugh, *Gen. Man.* ..... Philadelphia, Pa.
Enoch Lewis, *Pur. Agt.* ..... Philadelphia, Pa.
John Reilly, *Supt. Trans.* ..... Philadelphia, Pa.
Theo. N. Ely, *Gen. S. M. P.* ..... Altoona, Pa.
Pennsylvania R. R. Divs.
4-9 g. 1,213 m. 705 lo. 46,819 cars.
S. M. Prevost, *Gen. Supt.* ..... Altoona, Pa.
Frank L. Sheppard, *Supt. M. P.* .. Altoona, Pa.
G. W. Strattan, *M. M.* ..... Altoona, Pa.
Jno. P. Levan, *Gen. Fore.* ..... Altoona, Pa.
Phila. Div.: Tho. Gucker, *Supt.* Philadelphia, Pa.
H. D. Garrett, *M. M.* .... W. Philadelphia, Pa.
I. W. Van Houten, *Gen. For.* .... W. Phila., Pa.
Schuylkill Div.:
Jas. Reed, *Supt.* ..... Reading, Pa.

Mid. Div.: O. E. McClellan, *Supt.* Harrisburg, Pa.
E. L. Caum, *M. M.* ..... Harrisburg, Pa.
Samuel W. Myers, *Gen. For.* Harrisburg, Pa.
Altoona Div.: J. B. Hutchinson, *Supt.* Altoona, Pa.
Pitts. Div.: Robert Pitcairn, *Supt.* .. Pittsburgh, Pa.
D. O. Shaver, *M. M.* ..... Pittsburgh, Pa.
J. G. Stewart, *Gen. For.* ..... Pittsburgh, Pa.
W. Pa. Div.: A. P. Kirtland, *Supt.* Blairsville, Pa.
Wm. B. Norris, *M. M.* ..... Blairsville, Pa.
M. H. Fails, *Gen. For.* ..... Blairsville, Pa.
Fred. Div.: Wilson Brown, *Supt.* ..... York, Pa.
Tyrone Div.: S. S. Blair, *Supt.* ..... Tyrone, Pa.
Lew. Div.: Wm. M. Phillips, *Supt.* Lewistown, Pa.
Bed. Div.: R. L. Holliday, *Supt.* ..... Bedford, Pa.
Monong. Div.: David M. Watt, *Supt.* Pittsburgh, Pa.
Wm. Lininger, *M. M.* ..... Ormsby, Pa.
(2) United R. Rs. of N. J. Divs. 471 m. 330 lo. 4,041 c.
F. Wolcott Jackson, *Gen. St.* Jersey City, N. J.
H. S. Hayward, *Supt. M. P.* .. Jersey City, N. J.
David H. Baker, *Gen. For.* ... Jersey City, N. J.
N.Y. Div.: Robt. E. Pettit, *Supt.* Jersey City, N. J.
L. A. Bosdevex, *M. M.* ..... Jersey City, N. J.
E. F. Bosdevex, *Gen. For.* .. Jersey City, N. J.
Belv. Div.: J. A. Anderson, *Supt.* Lambertv., N. J.
R. McDowell, *M. M.* ..... Lambertville, N. J.
Amboy Div.: W. N. Bannard, *Supt.* Camden, N. J.
Thos. Kerr, *M. M.* ..... So. Amboy, N. J.
P. S. Bogart, *Gen. For.* ..... So. Amboy, N. J.
(2½) Camden & At. Rd.: 75 m. 18 l. 261 c.
Joseph Crawford, *Supt.* ..... and
Rufus Hill, *M. M.* ..... Camden, N. J.
Samuel Wills, *M. C. B.* ..... Camden, N. J.
(3) West Jersey R. R. 4-9 g. 188 m. 27 lo. 294 cars.
Joseph Crawford, *Gen. Supt.* ..... Camden, N. J.
W. McAlister, *M. M.* ..... Camden, N. J.
C. C. Williams, *Gen. For.* ..... Camden, N. J.
(4) Phila., Wilm. & Balt. R.R. 409 m. 128 lo. 1,882 c.
H. F. Kenney, *Gen. Supt.* ..... Philadelphia, Pa.
J. M. Wallis, *S. M. P.* ..... Philadelphia, Pa.
H. D. Gordon, *M. M.* ..... Wilmington, Del.
W. H. Lungren, *M. C. B.* ..... Wilmington, Del.
Cen. Div.: L. K. Lodge, *Supt.* ..... Media, Pa.
Del. Div.: I. N. Mills, *Supt.* ..... Clayton, Del.
Mo. Div.: H. H. Carter, *Supt.* .. Wilmington, Del.
(5) Phila. & Erie R. R. Divs.: 437 m. 110 lo. 3,089 c.
R. Neilson, *Gen. Supt.* ..... Williamsport, Pa.
A. O. Dayton, *Supt. Mo. Po.* .. Williamsport, Pa.
E'n. Div.: E. B. Westfall, *Supt.* Williamsport, Pa.
Sun. H. & W. Div.: A. Walter, *Supt.*; and
H. K. Stout, *M. M.* ..... Sunbury, Pa.
Mid. Div.: Tho. A. Roberts, *Supt.* ..... Renovo, Pa.
Wm. L. Holman, *M. M.* ..... Renovo, Pa.
West'n Div.: J. W. Reynolds, *Supt.* ..... Erie, Pa.
J. Gaskill, *M. M.* ..... Erie, Pa.
(6) Northern Central Ry. 4-9 g. 346 m. 152 lo. 6,610 c.
Robert Neilson, *Gen. Supt.* .. Williamsport, Pa.
A. O. Dayton, *Supt. M. P.* .... Williamsport, Pa.
A. W. Sumner, *Pur. Agt.* ..... Baltimore, Md.
J. M. Coale, *M. M.* ..... Baltimore, Md.
G. W. Demarest, *Gen. For.* ..... Baltimore, Md.
Susq. Div.: E. B. Westfall, *Supt.* Williamsport, Pa.
Sham. Div.: A. Walter, *Supt.* ..... Sunbury, Pa.
Elm. & Can. Divs.: S. Meade, *Supt.* .. Elmira, N. Y.
Jas. Strode, *M. M.* ..... Elmira, N. Y.
J. C. Dyott, *Gen. For.* ..... Elmira, N. Y.
Sodus Bay Div.: S. Mead, *Supt.* Sodus Point, N. Y.
Baltimore Div.: H. W. Kapp, *Supt.* Baltimore, Md.
(7) Balt. & Pot. & Alex. & Fred. 125 m. 30 lo. 360 c.
H. F. Kenny, *Gen. Supt.* ..... Philadelphia, Pa.
A. W. Sumner, *Pur. Agt.* ..... Baltimore, Md.
J. M. Wallis, *Supt. Mo. Po.* ..... Philadelphia, Pa.
H. D. Gordon, *M. M.* ..... Wilmington, Del.
J. Lescallett, *For. Mach. Shop.* Washington, D.C.
R. F. Downs, *For. Car Shop.* .. Washington, D.C.
Penn. Coal Co.'s R. R. 4-3 g. 67 m. 23 eng. 3,271 c.
J. B. Smith, *Gen. Supt.* ..... Dunmore, Pa.
And. Crane, *M. M.* ..... Dunmore, Pa.
Geo. W. Simpson, *M. C. B.* ..... Dunmore, Pa.
Pennsylvania, Slatington & New England R. R.
In progress. 4-8½ g. 18 m. 1 lo. 20 cars.
C. H. Stanton, *Supt.* ..... New York, N. Y.
Pennsylvania & Erie R. R.—Early Branch.
C. R. Early, *Gen. Supt.* ..... Ridgeway, Pa.
Pensacola & Atlantic R. R. 5 g. 161 m. 9 lo. 67 cars.
E. O. Saltmarsh, *Gen. Supt.* ..... Pensacola, Fla.
W. D. Robb, *M. M.* ..... Pensacola, Fla.
Pensacola & Perdido R. R. 5 g. 10 m. 5 lo. 92 cars.
B. F. Simmons, *Pr. & Supt.* ..... Pensacola, Fla.
H. W. Simmons, *Pur. Agt.* ..... Pensacola, Fla.
J. C. Schutte, *M. M.* ..... Pensacola, Fla.
People's Ry. 4-8½ g. 15 m. 2 lo. 14 cars.
W. D. Pollard, *Supt.* ..... Pottsville, Pa.
Peoria, Decatur & Evansville Ry.
4-8½ g. 254 m. 30 lo. 1,660 cars.
G. L. Bradbury, *Gen. Man.* ..... Peoria, Ill.
P. Reilly, *M. M.* ..... Mattoon, Ill.
Peoria & Farmington R. R. (*See Cen. Ia.*)
Peoria & Pekin Union Ry. 4-8½ g. 20 m. 12 lo. 106 c.
Thos. B. Burnett, *Gen. Supt. & P. A.* Peoria, Ill.
O. W. Bell, *Supt.* ..... Peoria, Ill.
R. F. Hurd, *M. M. & C. B.* ..... Peoria, Ill.
Perkiomen R. R. 4-8½ gauge 39 miles.
D. B. Clack, *Supt.* ..... Perkiomen Junction, Pa.
H. Boyd, *Pur. Agt.* ..... Norristown, Pa.
Petersburg R. R. 4-8½ g. 64 m. 10 lo. 133 cars.
R. M. Sully, *Supt.* ..... Petersburg, Va.
Geo. F. Jones, *Pur. Agt.* ..... Petersburg, Va.
J. R. Woodard, *M. M.* ..... Petersburg, Va.
J. W. Fleming, *M. C. B.* ..... Petersburg, Va.
Phila., Wilmington & Balt. R. R. (*See Penna. R. R.*)
Peterborough & Hillsborough. (*See Northern, N. H.*)
Philadelphia, Newtown & N. Y. R. R. 4-8½ g. 23 m.
W. M. Geary, *Supt.* ..... Philadelphia, Pa.
Phila. & Atlantic City Ry. 3-6 g. 55 m. 11 lo. 134 cars.
W. Bertolet, *Supt.* ..... Philadelphia, Pa.
W. S. Wilson, *Pur. Agt.* ..... Philadelphia, Pa.
H. M. Messimer, *M. M.* ..... Camden, N. J.
E. Lippincott, *M. C. B.* ..... Camden, N. J.
Philadelphia & Erie R. R. (*See Penna. R. R.*; (5) *Div.*)
Philadelphia & Reading R. R.
4-8½ g. 1,588 m. 940 lo. 57,477 cars.
John E. Wootten, *Gen. Man.* .. Philadelphia, Pa.
W. S. Wilson, *Pur. Agt.* ..... Philadelphia, Pa.
Geo. Eltz, *Supt. Trans.* ..... Reading, Pa.
L. B. Paxson, *Eng. of Mach.* ..... Reading, Pa.
No. Pa. & Bound Brook Div.:
I. A. Sweigard, *Supt.* ..... Philadelphia, Pa.
Mahanoy & Susquehanna Div.:
J. H. Olhausen, *Supt.* ..... Palo Alto, Pa.
D. C. Reinhart, *Asst. Supt.* ... Catawissa, Pa.
A. A. Hesser, *Asst. Supt.* Mahanoy Plane, Pa.
Schuylkill & Susquehanna Br.:
H. W. Tracy, *Supt.* ..... Pine Grove, Pa.
Reading & Columbia Br.:
A. M. Wilson, *Supt.* ..... Columbia, Pa.
2 N. J. Central Div.:
W. W. Stearns, *Supt.* ..... Elizabeth, N. J.
W. Woodcock, *M. M.* ..... Elizabethport, N. J.
Geo. Hackett, *M. C. B.* ..... Elizabethport, N. J.
C. G. Williams, *M. M.* ..... Jersey City, N. J.
John Alpaugh, *M. M.* ..... Phillipsburg, N. J.
L. Br. Div.: R. Blodgett, *Supt.* .. Long Branch, N. J.
N. J. Central and N. J. Southern Divs.:
W. W. Stearns, *Supt.* ..... Elizabeth, N. J.
Lehigh & Susquehanna Div.:
W. S. Polhemus, *Supt.* ..... Mauch Chunk, Pa.
Pittsburgh, Bradford & Buffalo Ry. (*See Pitts. & West.*)
Pittsburgh, Chartiers & Youghiogheny R. R.
4-8½ g. 19 m.
Geo. S. Griscom, *Gen. Man.* ..... Pittsburgh, Pa.
Pittsburgh, Cincinnati & St. Louis Ry. (5 Gen. Divs.)
4-9 g. 916 m. 239 lo. 7,133 cars.
James McCrea, *Manager* ..... Columbus, O.
Wm. Mullins, *Pur. Agt.* ..... Pittsburgh, Pa.
Edward B. Wall, *Supt. M. P.* ..... Columbus, O.
(1) P., C. & St. L. Div.: E. B. Taylor, *Supt.* Pittsburgh, Pa.
C. B. Street, *M. M.* ..... Dennison, O.
J. M. Copeland, *G. F. Car Shops.* Steubenville, O.
(2) C. & M. V. Div.: W. F. Black, *Supt.* .. Zanesville, O.
Leroy Kells, *M. M.* ..... Lancaster, O.
Wm. Meikle, *Gen. For.* ..... Lancaster, O.
Daniel Jewell, *Gen. F. Car Shops.* Lancaster, O.
(3) Li. Mi. Div.: Ralph Peters, *Supt.* .... Cincinnati, O.
Leroy Kells, *M. M.* ..... Cincinnati, O.
Jos. Underwood, *G. F. Car Shops.* Cincinnati, O.
(4) J. M. & I. R. R.: E. W. McKenna, *Supt.* Louisville, Ky.
Wm. Swanston, *M. M.* .... Jeffersonville, Ind.
Edw. Austin, *G. F. C. Shops.* Jeffersonville, Ind.

(5) Indianapolis & Vincennes R. R.
J. J. Turner, *Supt.* ..... Indianapolis, Ind.
Pittsburgh, Cleveland & Toledo R. R.
4-8½ g. 78 m. 18 lo. 525 cars.
C. H. Andrews, *Pres.* ..... Youngstown, O.
W. F. Hofecker, *M. M.* ..... Youngstown, O.
Pittsburgh, Ft. Wayne & Chicago Ry. (*See Penna. Co.*)
Pittsburgh Southern Ry. (*See Balt. & O.*)
Pitts. & Castle Shannon R. R. 3-4 g. 9 m. 5 lo. 428 c.
James M. Bailey, *Gen. Supt.* ... Pittsburgh, Pa.
Holmes Ward, *M. M.* ..... Castle Shannon, Pa.
Wm. E. Long, *M. C. B.* ..... Pittsburgh, Pa.
Pitts. & Lake Erie R. R. 4-8½ g. 70 m. 30 lo. 1,528 c.
W. C. Quincy, *Gen. Man.* ..... Pittsburgh, Pa.
D. H. Hostetter, *Pur. Agt.* ..... Pittsburgh, Pa.
R. W. Jones, *Mast. Trans.* ..... Pittsburgh, Pa.
S. W. Haines, *M. M.* ..... Pittsburgh, Pa.
Pittsburgh, McKeesport & Youghiogheny.
4-8½ g. 57 m. 19 lo. 278 cars.
W. C. Quincy, *Gen. Man.* ..... Pittsburgh, Pa.
R. W. Jones, *M. of Trans.* ..... Pittsburgh, Pa.
S. W. Haines, *M. M.* ..... Pittsburgh, Pa.
Pitts. & Western R. R. 3 & 4-8½ g. 110 m. 18 lo. 365 c.
Pitts., Bradford & Buff. Ry. 3 g. 93 m. 8 lo. 163 c.
Tho. M. King, *Gen. Man.* ..... Allegheny, Pa.
J. T. Johnson, *Supt.* ..... Allegheny, Pa.
J. Morton Hall, *Pur. Agt.* ..... Allegheny, Pa.
W. M. Flahavhan, *M. M.* ..... Allegheny, Pa.
Pontiac, Oxford & Pt. Austin R. R. 100 m.
Geo. W. Debevoise, *Pr. & Gen. Man.* N. York, N.Y.
Jas. Houston, *Gen. Supt.* ..... Pontiac, Mich.
Port Huron & No.-Western Ry. 3 g. 218 m. 14 lo. 288 c.
H. McMorran, *G. Man. & P. A.* Port Huron, Mich.
I. R. Wadsworth, *Supt.* .... Port Huron, Mich.
Chas. Diefenbach, *M. M.* .... Port Huron, Mich.
Benj. Hillier, *M. C. B.* ..... Port Huron, Mich.
Port Jervis & Monticello R. R. 4-8½ g. 24 m. 3 lo. 13 c.
M. V. Heller, *Gen. Man.* ..... Port Jervis, N. Y.
Port Royal & Augusta. 5 g. 180 m. 16 lo. 310c
and Augusta & Knoxville Rys.
J. N. Bass, *Supt.* ..... Augusta, Ga.
T. F. Warwick, *M. M. & M. C. B.* Augusta, Ga.
Portland & Ogdensburg. 4-8½ g. 110 m. 11 lo. 311 c.
J. Hamilton, *Gen. Supt. & P. A.* .. Portland, Me.
M. M. ..... Portland, Me.
W. G. Brewer, *M. C. B.* ..... Portland, Me.
Portland & Rochester R. R. 4-8½ g. 52 m. 8 lo. 226 c.
J. W. Peters, *Supt. & Pur. Agt.* .. Portland, Me.
E. H. C. Tompson, *For. of Mach.* .. Portland, Me.
David Dow, *For. of Car Repairs.* Portland, Me.
Potomac, Fred.'g & Pied. R. R. 3 g. 38 m. 2 lo. 38 c.
Will M. Grafton, *Supt.* ..... Fredericksburg, Va.
W. J. Sweigard, *M. M.* .... Fredericksburg, Va.
Pough., Hart. & Bos. R. R. 4-8½ g. 45 m. 4 lo. 65 c.
J. A. Perkins, *Supt.* ..... Poughkeepsie, N. Y.
John L. Donaldson, *M. M.* Poughkeepsie, N. Y.
Pratt Coal & Iron Company's R. R. 5 g. 20 m. 4 lo. 184 c.
W. L. Gude, *Gen. Man.* ..... Pratt Mines, Ala.
Prescott & Thirty-Fifth Parallel R. R.
4-8½ g. 77 miles in progress.
Samuel A. Henszey, *Gen. Man.* Prescott, Ariz.
Prince Edward Island Ry. 3-6 g. 210 m. 21 lo. 337 c.
Jas. Coleman, *Supt. & Pur. Agt.*;
Jos. Unsworth, *M. Supt. & Storekeeper*; and
D. M. Fraser, *M. C. B.* .. Charlottetown, P. E. I.
Profile & Franconia Notch R. R. 3 g. 15 m. 3 lo. 18 c.
Emmons Raymond, *Pur. Agt.* .. Boston, Mass.
C. H. Greenleaf, *Supt.* ..... Profile House, N. H.
Prospect Park & Coney Island R. R.
4-8½ g. 15 m. 8 lo. 123 cars.
R. Schermerhorn, *Supt.* ..... Brooklyn, N. Y.
Martin Painter, *M. M.* ..... Brooklyn, N. Y.
Prov., Warren & Bristol R. R. 4-8½ g. 19 m. 6 lo. 79 c.
Waterman Stone, *Supt.* ..... Providence, R. I.
Rufus Smith, *M. M. & C. B.* ..... Bristol, R. I.
Prov. & Springfield R. R. 4-8½ g. 23 m. 4 lo. 92 c.
Wm. Tinkham, *Gen. Man.* ..... Providence, R. I.
G. T. Richardson, *M. M.* ..... Providence, R. I.
Prov. & Worcester. 4-8½ g. 50 m. 37 lo. 1,253 c.
W. E. Chamberlain, *Supt.* ..... Providence, R. I.
A. Griggs, *Supt. L. & C. D.* ..... Providence, R. I.
Pullman's Palace Car Co. 1,100 passenger cars.
Geo. M. Pullman, *Pres.* ..... Chicago, Ill.
H. Porter, *V. Pres.* ..... New York, N. Y.
Geo. F. Brown, *Gen. Supt.* ..... Chicago, Ill.
Wm. A. Angell, *Pur. Agt.* ..... Chicago, Ill.
S. W. Bretzfield, *Asst. Pur. Agt.* New York, N.Y.
A. Rapp, *Man.* (Chicago Works) .. Chicago, Ill.
H. L. Spaulding, *Man.* (Det Shops). Detroit, Mich.
E. A. Benson, *Supt. Shops* ..... St. Louis, Mo.

Q

Quebec Central Ry. 4-8½ g. 147 m. 10 lo. 267 cars.
J. R. Woodward, *Gen. Man.* .. Sherbrooke, P. Q.
A. Steele, *Supt.* ..... Sherbrooke, Que.
R. D. Morkill, Jr., *Pur. Agt.* .. Sherbrooke, P. Q.
Jas. Seiveright, *M. M.* ..... Sherbrooke, P. Q.
Quebec, Montreal, Ottawa & Occidental Ry.
4-8½ g. 354 m. 36 lo. 993 cars.
L. A. Senecal, *Gen. Supt.* ..... Quebec, Que.
Quebec & Lake St. John Ry. 4-8½ g. 36 m. 3 lo. 55 c.
J. G. Scott, *Manager* ..... Quebec, Can.
Frank Fournier, *Supt.* ..... St. Raymond, P. Q.
John T. Eames, *M. M.* ..... St. Raymond, P. Q.
Queen Anne's & Kent and Townsend Branch R. R.
(*See Penna.*; (4) *Div.*)

R

Raleigh & Augusta Air-Line; Carolina Central Raleigh & Gaston R. Rs. 4-8½ g. 446 m. 52 lo. 1,052 c.
John C. Winder, *Gen. Man. & P. A.* Raleigh, N. C.
Raleigh Rds. 4-8½ g. 200 m. 27 lo. 638 cars.
B. R. Harding, *Supt. of Mach.* Raleigh, N. C.
Carolina Cen. R.R. 4-8½ g. 242 m. 26 lo. 431 c.
L. C. Jones, *Supt.* ..... Wilmington, N. C.
James Maglenn, *M. of Mach.* Laurinburg, N. C.
S. R. Ethridge, *M. C. B.* ..... Laurinburg, N. C.
Rensselaer & Saratoga R.R. (*See Del. & Hud. Can. Co.*)
Rhinebeck & Connecticut. (*See Hart. & Ct. Wn.*)
Richmond, Fredericksburg & Potomac R. R.
4-9 g. 81 m. 15 lo. 149 cars.
E. T. D. Myers, *Gen. Supt.* ..... Richmond, Va.
T. L. Courtney, *Asst. Supt.* ..... Richmond, Va.
H. Kuhn, *M. M.* ..... Richmond, Va.
W. H. Trainham, *M. C. B.* ..... Richmond, Va.
Rich., York River & Ches. R. R. (*See Rich. & Dan.*)
Richmond & Alleghany R.R. 4-9 g. 261 m. 19 lo. 837c.
Decatur Axtell, *Rec. & Gen. Man.* Richmond, Va.
M. Sweeney, *Pur. Agt.* ..... Richmond, Va.
Geo. D. Harris, *M. M. & C. B.* .. Richmond, Va.
Richmond & Danville R. R. Co.'s Roads.
1,736 miles 218 loco. 3,833 cars.
A. L. Rives, *Gen. Man.* ..... Richmond, Va.
Peyton Randolph, *As. G. Man.* .. Richmond, Va.
J. P. Minetree, *Pur. Agt.* ..... Richmond, Va.
R. D. Wade, *Supt. Mo. Po.* ..... Richmond, Va.
(1) Rich. & Dan. R. R. 5 g. 847 m. 131 lo. 2,687 cars.
Rich. & Dan. Div.: 5 g. 520 m. 80 lo. 1,707 c.
Wm. H. Green, *Supt.* ..... Richmond, Va.
M. M. ..... Richmond, Va.
J. B. Vaughan, *For. Car Sh.* .. Richmond, Va.
North Carolina Div. 5 g. 223 m. 22 lo. 268 cars.
A. B. Andrews, *Supt.* ..... Raleigh, N. C.
W. H. Turrentine, *M. M.* Comp'y's Shops, N. C.
J. C. Holt, *For. Car Sh.* Comp'y's Shop, N. C.
Atlanta & Char. Air Line. 5 g. 280 m. 31 lo. 415 c.
Narrow-Gauge Branches. 3 g. 80 m. 5 lo. 41 c.
Edmund Berkley, *Supt.* ..... Atlanta, Ga.
T. W. Gentry, *M. M.* ..... Atlanta, Ga.
Z. T. Smith, *For. Car Sh.* ..... Atlanta, Ga.
(2) Charlotte, Col. & Aug. R. R. 5 g. 239 m. 22 lo. 287 c.
G. R. Talcott, *Supt.* ..... Columbia, S. C.
J. H. Green, *M. M.* (2 roads) .. Columbia, S. C.
(3) Columbia & Greenville R. R. 5 g. 297 m. 22 l. 224 c.
G. S. Talcott, *Supt.* ..... Columbia, S. C.
J. O. Meredith, *For. E. & C. Rep.* ..... do.
(4) Virginia Midland Ry. 4-8½ g. 353 m. 41 lo. 631 c.
W. M. S. Dunn, *Eng. & Supt.* Alexandria, Va.
J. E. Waddey, *M. of M.* ..... Alexandria, Va.
J. T. Nalls, *M. C. B.* ..... Alexandria, Va.
Richmond & Petersburg R.R. 4-8½ g. 25 m. 8 lo. 132 c.
J. R. Kenly, *Supt.* ..... Richmond, Va.
John O'Brien, *M. M.* ..... Richmond, Va.
Rio Grande R. R. 3-6 g. 22 m. 3 lo. 40 cars.
M. J. Gomila, *Rec. & Gen. Man.* Brownsville, Tex.
G. W. Rendall, *M. M.* ..... Brownsville, Tex.
M. Markwood, *M. C. B.* ..... Brownsville, Tex.
Rio Grande & Pecos Ry. 4-8½ g. 27 m. In progress.
W. W. Hungerford, *Man.* ..... Laredo, Tex.

Rochester & Lake Ontario Ry. 4-8½ g. 6 m. 2 lo. 10 c.
N. B. Ellison, *Man.* ..... Rochester, N. Y.
Rochester & Pittsb'g R.R. 4-8½ g. 260 m. 60 lo. 3,296 c.
Geo. E. Merchant, *Gen. Man.* ... Rochester, N. Y.
J. T. Gardiner, *Gen. Supt.* ..... Buffalo, N. Y.
C. W. Mills, *Supt. M. P.* ..... Rochester, N. Y.
Rock Island & Mercer County R. R., and
Rock I'd & Peoria Ry. 4-8½ g. 113 m. 13 lo. 357 c.
R. R. Cable, *V.-P. & Gen. Supt.* ..... Chicago, Ill.
R. I. & P. Ry.:
H. B. Sudlow, *Supt. & P. A.* ... Rock Island, Ill.
Joseph Elder, *M. M.* ..... Peoria, Ill.
R. I. & M. C. Rd.: H. B. Sudlow, *Supt.* R'k Island, Ill.
J. H. Parks, *M. M.* ..... Rock Island, Ill.
Rogersville & Jefferson R. R. 5 g. 16 m. 1 lo. 6 cars.
C. M. Leuty, *Supt.* ..... Rogersville, Tenn.
Rome (Ga.) R. R. 5 g. 20 m. 2 lo. 17 cars.
Eben Hillyer, *Pres. & Supt.* ..... Rome, Ga.
O. W. Harbin, *M. M.* ..... Rome, Ga.
Rome, Watertown & Ogdensburg R. R.
4-8½ g. 418 m. 61 lo. 1,831 cars.
H. M. Britton, *Gen. Man. & P. A.* Oswego, N. Y.
Geo. H. Haselton, *S. M. P. & M.* Oswego, N. Y.
E'n Div.: J. D. Remington, *A. Supt.* Watertown, N. Y.
W'n Div.: W. H. Chauncey, *A. Supt.* Oswego, N. Y.
Roodhouse & Scottsville Ry. In progress.
Geo. P. Merrill, *Gen. Man.* ..... Chicago, Ill.
Ruby Hill R. R. (*See Eureka & Pal.*)
Rumford Falls & Buckfield R.R. 4-8½ g. 29 m. 2 l. 62 c.
L. L. Lincoln, *Supt. & Pur. Agt.* ... Canton, Me.

S

Sabine & East Texas Ry. (*See Cen. Pac.*)
Sacramento & Placerville R. R. (*See Cen. Pac.*)
Saginaw Bay & Northw'n R.R. 4-8½ g. 31 m. 6 lo. 136 c.
J. Jackson, *Gen. Man.* ..... Pinconning, Mich.
F. T. Lillote, *Act. Pur. Agt.* ... Pinconning, Mich.
Edward Keeler, *M. M.* ..... Pinconning, Mich.
Saginaw, Tuscola & Huron R. R.
3 g. 50 m. 5 lo. 85 cars.
M. B. Wilkinson, *Gen. Supt.* .. E. Saginaw, Mich.
Saginaw Valley & St. Louis R. R. 4-8½ g. 39 m. 4 l. 64 c.
T. M. Fish, *Gen. Supt.* ..... Ionia, Mich.
N. W. Merrill, *Div. Supt.* ..... Saginaw, Mich.
Allan Bourn, *Pur. Agt.* ..... Detroit, Mich.
Geo. C. Watrous, *M. M.* ..... Ionia, Mich.
Salt Lake & Western R. R. (*See Un. Pac.*; (6) *Div.*)
San Francisco & No. Pac. 4-8½ g. 139 m. 11 lo. 245 c.
Arthur Hughes, *Gen. Man.* .. San Francisco, Cal.
H. C. Whiting, *Supt.* ..... San Rafael, Cal.
Ed. Reynolds, *Gen. M. M.* ..... Donahue, Cal.
Ed. Reynolds, *M. C. B.* ..... Donahue, Cal.
Sanborn, Cooperstown & Turtle M. R. R. In progress.
C. A. Roberts, *Gen. Man.* ..... Sanborn, Dak.
Sandy River R. R. 2 g. 18 m. 3 lo. 36 cars.
N. B. Beal, *Pres. & Supt.* ..... Phillips, Me.
M. Saunders, *M. M. & C. B.* ..... Phillips, Me.
Sandusky, Mansfield & Newark R. R. (*See B. & O.*)
Sanford & Indian River R. R. (*See So. Flor.*)
San Luis Obispo & Santa Maria R. R.
3 g. 20 m. 2 lo. 30 cars.
Charles Goodall, *Man.* ..... San Francisco, Cal.
San Pete Valley R. R. 3 g. 33 m. 2 lo. 57 cars.
S. Bamberger, *Man.* ..... Salt Lake City, U. T.
J. E. Bamberger, *Pur. Agt.* .... Salt Lake, U. T.
B. Bates, *M. M.* ..... Morvin, U. T.
Santa Cruz R. R. (*See So. Pac.*; *Nor'n Div.*)
Saratoga, Mt. McGregor & Lake George R. R.
3 g. 11 m. 3 lo. 12 cars.
John McGee, *Supt.* .... Saratoga Springs, N. Y.
Savannah, Florida & W'n Ry. 5 g. 519 m. 62 lo. 1,063 c.
H. S. Haines, *Gen. Man.* ..... Savannah, Ga.
R. G. Fleming, *Supt.* ..... Savannah, Ga.
A. A. Aveilhé, *Pur. Agt.* ..... Savannah, Ga.
G. M. D. Riley, *M. of Mach.* ..... Savannah, Ga.
E. Geffcken, *For. Car Dept.* ..... Savannah, Ga.
Sav., Griffin & No. Ala. R. R. *Op. by Central* (*Ga.*)
Schuylkill & Lehigh R. R. (*See Phil. & Read.*)
Schoharie Valley R. R. (*See Middleburg & Sch.*)
Scioto Valley R. R. 4-8¾ g. 132 m. 19 lo. 548 cars.
Geo. Skinner, *Supt. & P. Agt.* ... Columbus, O.
R. Bromley, *M. M.* ..... Portsmouth, O.
Seaboard & Roanoke R. R. 4-8½ g. 80 m. 21 lo. 384 c.
E. G. Ghio, *Mast. of Trans.* .... Portsmouth, Va.
J. A. Walton, *Pur. Agt.* ..... Portsmouth, Va.
M. M. Pendleton, *S. M. P. & M.* Portsmouth, Va.
Sedalia, Warsaw & Southern Ry. (*See Mo. Pac.*)
Sharpsville R. R. 4-8½ g. 23 m. 3 lo. 13 cars.
Thos. M. King, *V. P. & Gen. Man.* Pittsburgh, Pa.
W. C. Agnew, *Asst. Gen. Man.* .. Youngstown, O.
Shell Beach R. R. 5 g. 22 m.
M. R. Spelman, *Supt.* ..... New Orleans, La.
Shenandoah Valley R. R. 4-9 g. 249 m. 32 lo. 849 c.
Norfolk & Western R. R. 5 g. 486 m. 82 lo. 1,779 c.
J. H. Sands, *Gen. Supt.* ..... Roanoke, Va.
W. C. De Armond, *Pur. Agt.* .. Philadelphia, Pa.
Chas. Blackwell, *Supt. of M. P.* .. Roanoke, Va.
W. A. Morgan, *M. C. B.* ..... Lynchburg, Va.
Sh. Val. Rd.: D. W. Flickwir, *Supt.* Roanoke, Va.
N. & W.; W. Div.: Frank Huger, *Supt.*; and
N. & W.; E. Div.: N. M. Osborne, *Supt.*; and
J. T. Robinett, *M. M.* ..... Petersburg, Va.
Shenango & Allegheny R.R. 4-8½ g. 74 m. 8 lo. 248 c.
J. T. Blair, *G. Man. & Pur. Agt.* Greenville, Pa.
Edw. Richardson, *M. M. & C. B.* Greenville, Pa.
Shepaug R. R. 4-8½ g. 38 m. 3 lo. 28 cars.
Edwin McNeill, *Supt.* ..... Litchfield, Ct.
A. J. Broughet, *M. M.* ..... Litchfield, Ct.
Ship Is., Ripley & Ky. R. R. 3 g. 25 m. 2 lo. 23 cars.
C. L. Harris, *Supt. & Pur. Agt.* ... Ripley, Miss.
W. H. Phelps, *M. M.* ..... Ripley, Miss.
Silver City, Deming & Pacific R. R. 3 g. 47 m. 3 l. 141 c.
John W. Smith, *Gen. Supt.* .... Silver City, N. M.
Silver Lake Ry. 4-8½ g. 6 m. 1 lo. 4 cars.
S. L. Chapin, *Supt.* ..... Perry, N. Y.
Sinaloa & Durango R. R. 4-8½ g. 38 m. 2 lo. 40 cars.
Geo. S. Skilton, *Supt.* ..... Altata, Sinaloa, Mex.
John E. Bell, *M. M.* ..... Culiacan, Mex.
Skaneateles R. R. 4-8½ g. 5 m. 2 lo. 5 cars.
J. McNamara, *Supt.* ..... Skaneateles, N. Y.
Sioux City & Pacific R. R. 4-8½ g. 427 m. 31 lo. 893 c.
W. P. Linsley, *Gen. Man.* .... Missouri Valley, Ia.
C. M. Lawler, *Gen. Supt.* .... Missouri Valley, Ia.
R. W. Hamer, *Pur. Agt.* ..... Chicago, Ill.
W. G. Brownson, *Asst. Supt.* .... Norfolk, Neb.
S. A. Teal, *M. M.* ..... Missouri Valley, Ia.
W. H. Ramseyer, *M. C. B.* .. Missouri Valley, Ia.
Smyrna & Delaware Bay R. R. (*See Kent County.*)
Sodus Bay Ry. (*See Northern Central.*)
Somerset R. R. 4-8½ g. 25 m. 3 lo. 24 cars.
W. M. Ayer, *Supt. & Pur. Agt.* ..... Oakland, Me.
S. P. Mosher, *For. Car Rep.* .... Oakland, Me.
C. Crowell, *For. Lo. Rep's.* .... No. Anson, Me.
Somerset & Cambria R. R. (*See B. & O.*)
Sonora Ry. (*See A., T. & S. Fe.*)
Sonoma Valley:
Arthur Hughes, *Gen. Man.* San Francisco, Cal.
H. C. Whiting, *Supt.* ..... San Rafael, Cal.
J. T. Peters, *Asst. Supt.* ..... Glen Ellen, Cal.
Ed. Reynolds, *M. M.* ..... Donahue, Cal.
South & North Alabama R. R. (*See Louis. & Nash.*)
South Carolina Ry. 5 g. 246 m. 46 lo. 834 cars.
John B. Peck, *Gen. Man.* ..... Charleston, S. C.
S. B. Pickens, *Pur. Agt.* ..... Charleston, S. C.
P. J. Cochrane, *Mast. of Mach.* Charleston, S. C.
Geo. H. Gramling, *M. C. B.* .... Charleston, S. C.
South-Eastern Ry. 4-8½ g. 280 m. 30 lo. 1,000 cars.
T. A. McKinnon, *Gen. Man.* .... Montreal, Can.
A. G. Eastman, *M. M.* ..... Farnham, P. Q.
South Florida R. R. 3 gauge 115 m. 13 lo. 250 cars.
B. R. Swoope, *Supt. & P. A.* ..... Sanford, Fla.
R. De by, *M. M.* ..... Sanford, Fla.
A. D. Stentiford, *M. C. B.* ..... Sanford, Fla.
South Mountain R. R. 4-8½ g. 18 m. 4 lo. 22 c.
W. H. Woodward, *Supt.* Pine G've Furnace, Pa.
South Pacific Coast R. R. 3 g. 81 m. 16 lo. 500 cars.
L. Fillmore, *Gen. Supt.* .... San Francisco, Cal.
W. H. Masterman, *M. M. & C. B.* Newark, Cal.
South-Western R. R. (Ga.) (*See Central of Ga.*)
South-Western Ry. (Ky.) 4-8½ g. 5 m. 1 lo. 28 cars.
M. Tabler, *Supt. & Man.* ..... Harrodsburg, Ky.
J. C. Hool, *Pur. Agt.* ..... Harrodsburg, Ky.
Southern Central R. R. 4-8½ g. 156 m. 21 lo. 467 c.
H. D. Titus, *Gen. Supt. & P. A.* .... Auburn, N. Y.
John White, *M. M.* ..... Auburn, N. Y.
H. Mooney, *M. C. B.* ..... Auburn, N. Y.
Southern Kansas Ry. (*See At., Top. & Santa Fe.*)
Southern Maryland R. R. 4-8½ g. 20 m. 1 lo. 20 c.

J. B. Ridgway, *Supt.* ....Brandywine, Md.
C. R. Joyce, *M. M.* ....Brandywine, Md.
Southern Pacific R. R. 4-8½ g. 203 m. 335 lo. 780 c.
Northern Div. (*For other Divs. see Cen. Pac.*)
A. C. Bassett, *Supt.* ......San Francisco, Cal.
J. R. Watson, *Pur. Agt.* .....Sacramento, Cal.
J. T. Wilson, *M. M.* ......San Francisco, Cal.
F. N. Bellisle, *M. C. B.* ...San Francisco, Cal.
Southern Pacific R. R. of Arizona. (*See Cen. Pac.*)
Southern Pacific R. R. of New Mexico. (*See Cen. Pac.*)
Spartanburg, Union & Columbia R. R.
(*See Rich. & Dan.; (3) Div.*
Spring Brook R. R. 4-3 g. 8 m. 1 lo. 18 cars.
Charles Pugh, *Pres.* ....Pittston, Pa.
Spring Hill & Parrsboro Ry. (*See Cumberland.*)
Springfield, Effingham & So.-E'n Ry. (*See Ind. & Ill.*)
Springville & Sardinia Ry. 4-8½ g. 12 m. 1 lo. 8 c.
Bertrand Chaffee, *Pres.* ....Springville, N. Y.
St. Croix & Penobscot R. R. 4-8½ g. 22 m. 4 lo. 195 c.
S. W. Haycock, *Supt. & Pur. Agt.* Calais, Me.
G. H. Corsen, *M. M.* ....Milltown, Me.
H. C. Tincker, *M. C. B.* ....Milltown, Me.
St. Helen, Houghton Lake & West.R.R. 4-8½ g. 13 m.
Z. C. Jessop, *Gen. Man.* ....Detroit, Mich.
St. John & Maine Ry. (*See New Brunswick.*)
St. John's Ry. 4-8½ g. 14¼ m. 2 lo. 24 cars.
R. McLaughlin, *Pr. & Supt.* Jacksonville, Fla.
J. M. Owens, *M. of Mach.* ...St. Augustine, Fla.
St. John's & Lake Eustis Ry. (*See Florida Southern.*)
St. Johnsb'ry & Lake Champ. 4-8½ g. 120 m. 15 lo. 372 c.
A. B. Jewett, *Supt. & P. A.* St. Johnsbury, Vt.
Geo. E. Howe, *M. M. & C. B.* St. Johnsbury, Vt.
St. Joseph Valley R. R. 3 g. 15 m. 1 lo. 11 cars.
E. T. Chase, *Gen. Man.* .Berrien Springs, Mich.
St. Joseph & Des Loge Ry. 3 g. 13 m. 4 lo. 70 cars.
T. T. Onderdonk, *Supt.* .....Bonne Terre, Mo.
St. Joseph & Western R. R.
4-8½ g. 252m. 21 lo. 175 cars.
L. D. Tuthill, *Gen. Supt. & P. A.* St. Joseph, Mo.
E. Sleepy, *M. M. & C. B.* ...St. Joseph, Mo.
St. Joseph & Des Moines R. R. (*See K. C., St. J. & C. B.*)
St. Lawrence & Ottawa Ry. (*See Can. Pac.*)
St. Louis, Alton & Terre Haute R. R.
Main Line. (*See C., C., C. & I.; Ind. & St. L. Div.*
St. Louis & Cairo Div.: 4-8½ g. 137 m. 19 lo. 800 c.
G. W. Parker, *Gen. Man.* ......St. Louis, Mo.
J. L. Hinckley, *Supt.* ....Belleville, Ill.
R. M. Pringle, *M. M.* ....E. St. Louis, Ill.
St. Louis Bridge Co. and Tunnel R. R.
4-8½ g. 31 m. 22 lo. 11 cars.
Wm. Taussig, *Gen. Man.* ....St. Louis, Mo.
A. W. Dickinson, *Supt.* ....St. Louis, Mo.
J. E. Williams, Jr., *Pur. Agt.* ....St. Louis, Mo.
H. M. Smith, *M. M.* ....St. Louis, Mo.
St. Louis, C. Cœur & St. Ch. Ry. 3 g. 16 m.
F. M. Colburn, *Gen. Man.* ....St. Louis, Mo.
St. Louis Coal R. R. 4-8½ g. 93 m. 10 lo. 217 cars.
R. J. Cavett, *Supt.* ....Carbondale, Ill.
Jas. C. Bryden, *Pur. Agt.* ......St. Louis, Mo.
St. Louis, Des Moines & Northern Ry. 4-8½ g. 43 m.
C. F. Merk, *Supt.* ....Des Moines, Ia.
St. L., Ft. Scott & Wichita R. R. 4-8½ g. 214 m. 61.337 c.
J. W. Miller, *V. P. & Gen. Man.* .Fort Scott, Kan.
Tho. N. Lewis, *Asst. Supt.* ......Fort Scott, Kan.
Henry Berger, *M. M.* ....Ft. Scott, Kan.
St. L., Hannibal & Keokuk. 4-8½ g. 85 m. 5 lo. 70 c.
E. C. Case, *Rec. & Man.* ....Hannibal, Mo.
E. W. Hoisington, *M. M.* ....Hannibal, Mo.
St. Louis, Iron Mt. & So'n Ry. (*See Mo. Pac.; (4) Div.*)
St. L., Keokuk & No.-W'n. Ry. (*See C., B. & Q.*)
St. L., Salem & Little Rock. 4-9 g. 72 m. 5 lo. 111 c.
H. A. Crawford, *V. Pr. & P. A.* ..St. Louis, Mo.
E. B. Sankey, *Supt.* ....Salem, Mo.
Thomas Everson, *M. M.* ....Steelville, Mo.
J. W. Houston, *M. C. B.* ....Steelville, Mo.
St. Louis & Cairo R. R. 3 g. 152 m. 22 lo. 896 cars.
Chas. Hamilton, *Gen. Supt.* .....St. Louis, Mo.
T. W. Newell, *M. M.* ....E. St. Louis, Mo.
St. L. & San Fran. Ry. 4-8½ g. 943 m. 103 lo. 3,737 c.
C. W. Rogers, *V. P. & Gen. Man.* .St. Louis, Mo.
D. H. Nichols, *Supt. Tran.* ..No. Springfield, Mo.
A. P. Mann, Jr., *Pur. Agt.* ....St. Louis, Mo.
M. Kearney, *M. M. & C. B.* ..No. Springfield, Mo.
East Div.: A. Veech, *Supt.* ....St. Louis, Mo.
Central Div.: W. A. Thoms, *Supt.* ..Springfield, Mo.
Kan. Div.: J. R. Wentworth, *Supt.* Neodesha, Kan.
St. Martin's & Upham Ry. 4-8½ g. 30 m. 2 lo. 8 cars.
A. E. Killam, *Manager* ....St. Martin's, N. B.
St. Paul Eastern Grand Trunk Ry. 4-8½ g. 15 m.
D. C. Lamb, *Gen. Supt.* ....Oconto, Wis.
St. Paul, Minneapolis & Manitoba Ry.
4-8½ g. 1,402 m. 201 lo. 5,068 cars.
A. Manvel, *Gen. Man.* ....St. Paul, Minn.
H. C. Ives, *Asst. Gen. Man.* ... St. Paul, Minn.
E. B. Wakeman, *Asst. Gen. Supt.* St. Paul, Minn.
J. C. Morrison, *Pur. Agt.* .... St. Paul, Minn.
H. Middleton, *M. M. & C. B.* ... St. Paul, Minn.
Breck. Div.: W. S. Kemp, *Supt.* ...St. Paul, Minn.
F. F. Div.: J. B. Rice, *Supt.* ....St. Paul, Minn.
No'n Div.: A. Guthrie, *Supt.* ....Crookston, Minn.
St. Paul & Duluth R. R. 4-8½ g. 225 m. 37 lo. 1,080 c.
W. H. Fisher, *Gen. Supt.* ....St. Paul, Minn.
J. G. Callahan, *Pur. Agt.* ....St. Paul, Minn.
Chas. F. Ward, *M. M. & M. C. B.* ..St. Paul, Minn.
State Line & Sullivan R. R. 8½ g. 25 m. 3 lo. 263 c.
I. O. Blight, *Supt.* ....Towanda, Pa.
Staten Island R. R. ¼ g. 13 m. 4 lo. 18 c.
J. W. Wilbur, *Supt.* ....New York, N. Y.
Stony Clove & Catskill Mountain R. R.
3 g. 14 m. 2 lo. 22 cars.
Geo. Coykendall, *Gen. Supt.* ....Rondout, N. Y.
Stony Creek R. R. 4-8½ g. 103 m.
Geo. B. Boggs, *Supt.* ....Norristown, Pa.
Sterling Mountain Ry. 6 g. 8 m. 2 lo. 145 cars.
J. C. Missimer, *Supt.* ....Sloatsburg, N. Y.
Suffolk Lumber R. R. 3 g. 15 m. 3 lo. 41 cars.
W. M. Whaley, *Supt.* ....Suffolk, Va.
Summit Branch R. R. 4-9 g. 20 m. 7 lo. 10 cars.
Thomas Gucker, *Supt.* ....Williamsport, Pa.
Susquehanna & Delaware River R. R. In progress.
D. Y. Kilgore, *Pres.* ....Philadelphia, Pa.
Sussex R. R. (*See Del., Lack. & West.*)
Syracuse, Binghamton & N. Y. R. R. (*See D. L. & W.*)
Syr., Ontario & N. Y. R. R.
Albert Allen, *Supt.* ....New York, N. Y.
Syracuse, Geneva & Corning; Corning, Cowanasque & Antrim R. Rs. 4-8½ g. 142 m. 28 lo. 1,044 c.
A. H. Gorton, *Supt.* ....Corning, N. Y.
W. E. Gorton, *Asst. Supt.* ....Corning, N. Y.
W. H. Chapne, *Pur. Agt.* ....Corning, N. Y.
O. C. Patchell, *M. M.* ....Corning, N. Y.
C. J. Butler, *M. C. B.* ....Corning, N. Y.

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Tennessee Coal R. R. 5 g. 28 m. 8 lo. 204 cars.
A. M. Shook, *Gen. Man.* ......Tracy City, Tenn.
W. A. Knight, *M. M.* ....Tracy City, Tenn.
Tennessee & Sequatchee Valley R. R.
3 g. 42 m. 1 lo. 24 cars.
Chas. Clinton, *Gen. Supt.* ...Spring City, Tenn.
P. V. Mooney, *Pur. Agt.* .....Spring City, Tenn.
Terre Haute & Indianapolis R. R.
4-9 g. 421 m. 105 lo. 4,318 cars.
Joseph Hill, *Gen. Supt.* ....St. Louis, Mo.
C. R. Peddle, *P. Agt.* ....Terre Haute, Ind.
Geo. H. Prescott, *S. M. P. & M.* Terre Haute, Ind.
F. C. Cleaver, *M. M.* ....Terre Haute, Ind.
E. D. Carter, *M. C. B.* ......Terre Haute, Ind.
Chas. Butler, *M. M.* ....Effingham, Ill.
Clinton Idler, *Foreman* ...Indianapolis, Ind.
Terre Haute & So.-Eastern Ry. 4-9 g. 44 m. 2 lo. 145 c.
Geo. Atherton, *Supt.* ....Terre Haute, Ind.
Texas-Mexican Ry. (*See Mex. Nat.*
Texas Trunk R. R. 4-8½ g. 36 m. 2 lo. 8 cars.
Hugh Irwin, *Gen. Supt.* ....Dallas, Tex.
Texas Western Ry. 3 g. 52 m. 2 lo. 44 cars.
Henry Hatch, *Gen. Man.* ....Houston, Tex.
T. F. Glispin, *M. M.* ....Houston, Tex.
Texas & N. O. R. R. (*See Cen. Pac.; G. H. & S. A. Div.*)
Texas & Pacific. (*See Mo. Pac. Ry.; (6) Div.*)
Texas & St. Louis Ry. 3 g. 769 m. 84 lo. 2,000 cars.
W. R. Woodard, *Rec. and Gen. Man.* St. Louis, Mo.
J. J. Frey, *Gen. Supt.* ....Pine Bluff, Ark.
C. S. Brooke, *Pur. Agt.* ....St. Louis, Mo.
Mo. & Ark. Div.:
J. R. Hastings, *Supt.* ....Pine Bluff, Ark.
Tex. Div.: H. Flanders, *Supt.* ....Tyler, Tex.
P. J. Milan, *Gen. M. M.* ....Pine Bluff, Ark.
Tionesta Valley R. R. 3 g. 15 m.
George Dickinson, *Gen. Supt.* .....Sheffield, Pa.

Tioga R. R. 4-8½ and 6 g. 67 m. 18 lo. 960 cars.
L. H. Shattuck, *Supt.* ....Blossburg, Pa.
J. C. Guthrie, *Pur. Agt.* ....New York, N. Y.
Pero Bonny, *M. M.* ....Blossburg, Pa.
D. H. Stratton, *M. C. B.* ....Blossburg, Pa.
Toledo, Ann Arbor & No. M'h Ry.
4-8½ g. 63 m. 9 lo. 186 c.
J. M. Ashley, *Gen. Man.* ....Ann Arbor, Mich.
H. W. Ashley, *Supt. & Pur. Agt.* do
C. C. Dodge, *M. M.* ....Ann Arbor, Mich.
Toledo, Cin. & St. Louis R. R. 3 g. 798 m. 101 lo. 3,500 c.
E. P. Murray, *Gen. Supt.* ....Toledo, O.
F. W. Stewart, *P. Agt.* ....Toledo, O.
Thos. Robertson, *M. M.* ....Delphos, O.
Toledo Div.: W. H. Vandergrift, *Supt.;* do
J. S. Wiers, *For. Car Rep.* ....Delphos, O.
Tol., Cin. & St. L. Div.:
E. C. Henderson, *Gen. Man.* Indianapolis, Ind.
J. K. Gimperling, *Supt.* ....Dayton, O.
H. C. Norton, *Pur. Agt.* ....Indianapolis, Ind.
E. Niscroft, *M. M.* ....Dayton, O.
Dayton & Ironton Div.:
C. C. Clark, *Supt.* ....Ironton, O.
St. Louis Div.: Frank F. Allen ....Charleston, Ill.
P. H. Murphy, *M. M.* ....Charleston, Ill.
Toledo & Indianapolis R. R. 4-8½ g. 43 m. 4 lo. 118 c.
David Robison, Jr., *Rec.* ....Toledo, O.
Toledo & South Haven R. R. (*See Paw Paw.*)
Tonawanda Val. & Cuba R. R. (*See Brad., B. & K.*)
Toronto, Grey & Bruce Ry. (*See Canadian Pacific.*)
Toronto & Nipissing Ry. (*See Mid. Ry. of Can.*)
Troy & Boston R. R. 4-8½ g. 48 m. 20 lo. 484 cars.
D. Robinson, *Pres.* ....Troy, N. Y.
Joseph Crandell, *Supt.* ....Troy, N. Y.
C. H. Hubbell, *Pur. Agt.* ....Troy, N. Y.
Z. B. Davis, *M. M.* ....Troy, N. Y.
A. Brewer, *M. C. B.* ....Troy, N. Y.
Troy & Greenfield R. R. & H. Tunnel. 4-8½ g. 44 m.
J. W. Locke, *Man.* ....North Adams, Mass.
Tuckerton R. R. 4-8½ g. 31 m. 2 lo. 29 cars.
J. J. Pharo, *Supt. & Pur. Agt.* Tuckerton, N. J.

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Ulster & Delaware R. R. 4-8½ g. 74 m. 10 lo. 218 cars.
Jas. H. Jones, *Supt.* ....Rondout, N. Y.
John H. Decker, *M. C. B.* ....Rondout, N. Y.
Union Ry. 5 g. 9 m. 3 lo.
C. E. James, *Pres.* ....Chattanooga, Tenn.
D. J. O'Connell, *Gen. Man.* Chattanooga, Tenn.
Union Pacific Ry. (7 Gen. Divs.)
3 & 4-8½ g. 4,633 m. 510 lo. 10,550 cars.
S. R. Callaway, *Gen. Man.* ....Omaha, Neb.
S. T. Smith, *Gen. Supt.* ....Omaha, Neb.
Thos. L. Kimball, *Ast. Gen. Man.* Omaha, Neb.
Pur. Agt. ....Omaha, Neb.
I. H. Congdon, *S. M. P. & C. D.* ...Omaha, Neb.
John Wilson, *Asst. do* ....Omaha, Neb.
(1) Neb. Div.: O. H. Dorrance, *Gen. Supt.* Omaha, Neb.
E. Div.: C. B. Havens, *Supt.* ....Omaha, Neb.
R. McConnell, *M. M.* ....Omaha, Neb.
A. M. Collett, *M. C. B.* ....Omaha, Neb.
E. Sleppy, *M. M.* ....G. Island, Neb.
L. Pole Div.: W. A. Deuel, *Supt.* ..Cheyenne, W. T.
J. H. McConnell, *M. M.* ....N. Platte, Neb.
R. McDougall, *M. M.* ....Cheyenne, W. T.
(2) Wy. Div.: E. Dickenson, *Gen. Supt.* Laramie, W. T.
T. E. Lewis, *M. M.* ....Laramie, W. T.
T. A. Davis, *M. M.* ....Rawlins, W. T.
Wes. Div.: C. E. Wurtele, *Supt.* Evanston, W. T.
Geo. F. Chapman, *M. M.* ....Evanston, W. T.
(3) Idaho Div.: R. Blickenderfer, *Gen. Supt.* Ogden, U.
F. Rearden, *M. M.* ....Pocatello, Id.
Ogden Short Line Div.:
R. Blickensderfer, *Supt.* ....Pocatello, Id.
Utah & Northern Div.:
W. P. F. St. Clair, *Supt.* ....Eagle Rock, Id.
W. J. Hemphill, *M. M.* ....Eagle Rock, Id.
W. J. Hemphill, *M. M.* ....Eagle Rock, Id.
J. W. Paul, *Gen. For. C. D.* ..Eagle Rock, Id.
(4) Col. Cent. Div.: A. A. Egbert, *Gen. Supt.* Denver, Col.
F. Meitzheimer, *M. M.* ....Denver, Col.
C. C. Div.: P. Touhy, *Supt.* ....Denver, Col.
So. Park Div.: D. K. Sweet, *A. Supt.* Como, Col.
(5) Kan. Div.: H. O. Brinkerhoff, *G. Supt.* Kan. City, Mo.
K. Pac. Div.: J. O. Brinkerhoff, *Supt.* Kan. C'y, Mo.
J. O. Chapman, *M. M.* ....Armstrong, Kan.
T. B. Roberts, *M. C. B.* ....Armstrong, Kan.
Kansas Central Div.:
J. O. Brinkerhoff, *Supt.* ..Leavenworth, Kan.
Smoky Hill Div.:
G. H. Dorance, *Supt.* ....Wallace, Kan.
J. B. Dailey, *M. M.* ....Ellis, Kan.
6 Salt Lake & Western Div.:
W. W. Ritter, *Supt.* ....Salt Lake City, Utah.
(7) Nevada Central Ry. 3 g. 93 m. 4 lo. 78 cars.
Jos. K. Choate, *Gen. Supt. & P. A.* Battle Mt., Nev.
Z. T. Sprigg, *M. M.* ....Battle Mountain, Nev.
United States Rolling Stock Co. 19 lo. 4,692 cars.
A. Hegewisch, *Pres.* ....New York, N. Y.
W. H. Chaddock, *Gen. Agt.* ....Chicago, Ill.
Upson County R. R. (*See Central of Ga.*)
Utah Central Ry. 4-8½ g. 280 m. 21 lo. 358 cars.
John Sharp, *Gen. Supt.* ....Salt Lake City, Utah.
S. H. Hill, *Pur. Agt.* ....Salt Lake City, Utah.
Geo. G. Bywater, *M. M.* ..Salt Lake City, Utah.
Peter Reid, *M. C. B.* ....Salt Lake City, Utah.
Utah & Nevada Ry. 3 g. 37 m. 3 lo. 83 cars.
W. W. Ritter, *Gen. Man.* ...Salt Lake City, Utah.
Robert Anderson, *M. M.* ...Salt Lake City, Utah.
Utah & Northern Ry. (*See Union Pac.; (3) Div.*)
Utah & Pleasant Valley Ry. (*See Den. & Rio. Gr.*)
Utica, & Black Riv. R. R. 4-8½ g. 180 m. 25 lo. 412 c.
E. A. Van Horne, *Gen. Supt. & P. A.* Utica, N. Y.
H. W. Hammond, *Asst. Supt.* ....Utica, N. Y.
John Bailey, *M. M.* ....Utica, N. Y.
David James, *M. C. B.* ....Utica, N. Y.

V

Vaca Vall. & Clear Lake R. R. 4-8½ g. 30 m. 2 lo. 19 c.
G. B. Stevenson, *Gen. Supt.* ....Vacaville, Cal.
Valley Ry. (Ohio) 4-8¾ g. 85 m. 21 lo. 889 cars.
Isaac Reynolds, *Gen. Man.* ....Cleveland, O.
J. E. Turk, *Supt.* ....Cleveland, O.
H. Melcher, *Pur. Agt.* ....Cleveland, O.
Valley R. R. Va. 4-8½ g. 62 m.
S. Spencer, *Pres.* ....Baltimore, Md.
Vermont Valley R. R. (*See Conn. River.*)
Vicksburg & Brunswick R. R. (*See Cen. of Ga.*)
Vicksburg & Meridian R. R. (*See Cin., N. O. & Tex. Pac.*)
Vicks, Shreveport & Pac. R. R. (*See C., N. O. & T. P.*)
Victoria Ry. (*See Midland Ry. of Can.*)
Virginia Midland Ry. (*See Rich. & Dan.; (4) Div.*)
Virginia & Truckee R. R. 4-8½ g. 54 m. 8 lo. 136 c.
Carson & Colorado R. R. 3 g. 294 m. 6 lo. 134 c.
H. M. Yerington, *Gen. Supt.* ....Carson, Nev.
R. J. Laws, *Supt.* (C. & Col.) ......Hawthorne, Nev.
Hume Yerington, *Pur. Agt.* ....Carson, Nev.
I. N. Fording, *M. M.* ....Carson, Nev.
M. M. Hyde, *M. C. B.* ....Carson, Nev.

W

Wabash, Chester & W'n R. R. (*See St. Louis Coal.*)
Wabash, St. Louis & Pacific Ry. (4 Gen. Divs.)
4-8½ g. 3,241 m. 598 lo. 17,230 cars.
Jas. F. Joy, *Pres.* ....St. Louis, Mo.
A. L. Hopkins, *V. P.* ....St. Louis, Mo.
A. A. Talmage, *Gen. Man.* ....St. Louis, Mo.
H. H. Wellman, *Pur. Agt.* ....St. Louis, Mo.
Jacob Johann, *Supt. M. P. & M.* Springfield, Ill.
M. M. Martin, *Supt. Car Dept.* ....Decatur, Ill.
(1) Eas'n Div.: G. W. Stevens, *Supt.* ....Peru, Ind.
J. B. Barnes, *M. M.* ....Fort Wayne, Ind.
John McKenna, *M. M.* ....Peru, Ind.
Cairo Div.: C. F. Lape, *M. M.* ...Mt. Carmel, Ill.
Rant'l Div.: B. F. Mathias, *Asst. Supt.* Rantoul, Ill.
C. W. Hollister, *Gen. For.* ....Rantoul, Ill.
(2) Middle Div.: E. N. Armstrong, *Supt.* Decatur, Ill.
Theo. Bergold, *M. M.* ....Springfield, Ill.
B. B. Rose, *M. C. B.* ....Decatur, Ill.
G. A. Hurd, *Asst. Supt.* ....Decatur, Ill.
E. B. Hyde, *Asst. Supt.* ....Havana, Ill.
(3) Western Div.: R. G. Butler, *Supt.* ..Moberly, Mo.
W. H. Selby, *M. M.* ....Moberly, Mo.
C. S. Buck, *M. C. B.* ....Moberly, Mo.
John Long, *A. Supt. C. D.* ....Moberly, Mo.
D. Moin. Div.: C. F. Meek, *A. Supt.* Des Moines, Ia.
Walden's Bridge R. R. 3 g. 23 m. 3 lo. 37 cars.
John G. Scott, *Gen. Man.* ....Jenks P. O., Tenn.
Wallkill Valley.
J. E. Childs, *Gen. Supt.* ....New York, N. Y.

Geo. H. Graves, *Supt.* ....Kingston, N. Y.
E. Minshull, *M. M.* ....Middletown, N. Y.
I. W. Fowler, *Pur. Agt.* ....Middletown, N. Y.
Walla Walla & Columbia Riv. R. R. (*See Ore. Ry.*)
Walton R. R. 5 g. 10 m. 1 lo. 7 cars.
D. H. Walker, *Pres.* ....Monroe, Ga.
Warren & Farnsworth Valley R. R.
3 g. 16 m. 3 lo. 39 cars.
A. D. Wood, *Gen. Man.* ....Warren, Pa.
Warwick Valley R. R. (*See Leh. & Hud. River.*)
Wasatch & Jordan Valley R. R. (*See Den. & Rio. Gr.*)
Washington, Ohio & West. R. R. 4-8½ g. 52 m. 5 lo. 87 c.
S. M. Brophy, *Supt.* ....Alexandria, Va.
W. Mountjoy, *Act. For.* ....Alexandria, Va.
John Harrison, *M. C. B.* ....Alexandria, Va.
Waynesburg & Washington Rd. 3 g. 29 m. 3 lo. 26 c.
C. E. Bower, *Supt.* ....Waynesburg, Pa.
A. M. Kline, *M. C. B.* ....Waynesburg, Pa.
Welland Ry. 4-8½ g. 25 m. 4 lo. 147 cars.
William Pay, *Supt.* ....St. Catharines, Ont.
Jas. Taylor, *M. M.* ....St. Catharines, Ont.
Wm. H. Pay, *M. C. B.* ....St. Catharines, Ont.
West Feliciana R. R. 4-8½ g. 27 m. 2 lo. 22 cars.
J. B. McGehee, *Pr. & Gen. Supt.* Bayou Sara, La.
J. A. Tilton, *M. M. & C. B.* .....Bayou Sara, La.
W. Va., Central & Pittsb'g Ry. 4-8½ g. 50 m. 4 lo. 119 c.
T. B. Davis, *Gen. Man.* ....Piedmont, W. Va.
W. E. Porter, *Gen. Supt.* ....Piedmont, W. Va.
Geo. W. Harrison, *Pur. Agt.* ...Piedmont, W. Va.
E. W. Lippencott, *M. M.* .....Piedmont, W. Va.
West & East R. R. (*See Ill. Cen.; N. O. Div.*)
West Jersey R. R. (*See Penn. R. R.; (3) Div.*)
Western R. R. (of Ala.) 5 g. 85 m. 15 lo. 270 cars.
Atlanta & W. Point Rd. 5 g. 87 m. 14 lo. 240 c.
Cecil Gabbett, *Gen. Man. & Supt.* ..Mont., Ala.
C. D. Wall, *M. M. & C. B.* ...Montgomery, Ala.
Western Counties' Ry. 4-8½ g. 67 m. 8 lo. 137 cars.
J. Brignell, *Supt.* ....Yarmouth, N. S.
Western Maryland R. R. 4-8½ g. 127 m. 28 lo. 610 c.
J. M. Hood, *Pr. & Gen. Man.* ....Baltimore, Md.
R. J. Adair, *Pur. Agt.* ....Baltimore, Md.
David Holtz, *Mast. of Mach.* ..Union Bridge, Md.
J. H. Nussear, *M. C. B.* ....Union Bridge, Md.
Western No. Carolina R. R. 5 g. 210 m. 17 lo. 160 c.
V. E. McBee, *Supt.* ....Salisbury, N. C.
Jos. P. Minetree, *Pur. Agt.* ....Richmond, Va.
G. W. Gates, *M. M.* ....Salisbury, N. C.
Western & Atlantic R. R. 5 g. 138 m. 58 lo. 952 c.
R. A. Anderson, *Gen. Supt.* ....Atlanta, Ga.
A. B. Bostwick, *Asst. Supt.* ....Atlanta, Ga.
Lamar Collier, *M. M.* ....Atlanta, Ga.
Wm. Kinyon, *M. C. B.* ....Atlanta, Ga.
Wheeling, Pittsburg & Baltimore R. R. (*See B. & O.*)
Wheeling & Lake Erie R. R. 267 m. 37 lo. 1,922 c.
M. D. Woodford, *Rec. & Gen. Man.* ..Toledo, O.
O. P. Dunbar, *Gen. M. M.* ....Norwalk, O.
John Hillhouse, *Div. M. M.* ....Norwalk, O.
Cleve. & Mar. Div.:
A. Galloway, *M. M.* ....Cambridge, O.
Whitby, Port Perry & Lindsay Ry. (*See Mid. of Can.*)
White Water R. R. (*See Ft. W., Cin. & Lou.*)
Whitefield & Jefferson R. R. (*See Bos., Con. & Mon.*)
Whitneyville & Machiasport R. R. 8 m. 2 lo. 48 c.
C. Sullivan, *G. M. & Pur. Agt.* Whitneyville, Me.
Wicomico & Pocomoke R. R. 4-8½ g. 30 m. 2 lo. 38 c.
L. Showell, *Pres.* ....Berlin, Md.
Williamsport & North Branch R. R.
4-8½ g. 14 m. 2 lo. 4 cars.
B. G. Welch, *Man. & P. Agt.* ..Hughesville, Pa.
Williamstown & Del. River R. R.
4-8½ g. 27 m. 1 lo. 12 cars.
Samuel Garwood, *Supt.* ...Williamstown, N. J.
Wilmington, Columbia & Augusta R. R. (*See W. & W.*)
Wilmington & No'n R. R. 4-8¾ g. 85 m. 17 lo. 155 c.
A. G. McCausland, *Supt. & P. A.* Wilmington, Del.
George Rommel, *M. M.* ....Wilmington, Del.
Alex. Maitland, *M. C. B.* ......Wilmington, Del.
Wilmington & Weldon; Northeastern; S. C. Central; Cheraw & Darlington; Cheraw & Salisbury; and Wilmington, Columbia & Augusta R. Rs.
4-8½ g. 682 miles 104 locomotives 1,725 cars.
H. Walters, *Gen. Man.* ....Baltimore, Md.
J. F. Divine, *Gen. Supt.* ....Wilmington, N. C.
John Bisset, *M. M.* ....Wilmington, N. C.
W. H. Day, *M. C. B.* ....Florence, S. C.
J. H. Davis, *M. C. B.* (W. & W.) Wilmington, N. C.
Winifrede R. R. 4-9 g. 5 m. 1 lo. 65 cars.
Theodore Wright, *Pres.* ....Philadelphia, Pa.
Windsor & Annapolis Ry. 4-8½ g. 130 m. 10 lo. 160 c.
P. Innes, *Gen. Man.* ....Kentville, N. S.
Wm. Yould, *M. M.* ....Kentville, N. S.
Wm. Grierson, *M. C. B.* ....Kentville, N. S.
Wisconsin Central R. R. 4-8½ g. 480 m. 59 lo. 1,800 c.
F. N. Finney, *Gen. Man.* ....Milwaukee, Wis.
E. K. Howes, *Pur. Agt.* ....Milwaukee, Wis.
W. A. Short, *M. M.* ....Stevens Pt., Wis.
Mis. & E'n Divs.: A. A. Allen, *S.* ..Milwaukee, Wis.
Mid. & Nor. Div.:
W. E. Carroll, *Supt.* ....Stevens Point, Wis.
Wisconsin, Iowa & Nebraska.
B. L. Harding, *Gen. Man.* ......Des Moines, Ia.
G. C. McMichael, *Supt.* ....Marshalltown, Ia.
M. C. Wheeler, *M. M.* ....Marshalltown, Ia.
Wisconsin & Michigan R. R. (*See Mil. & North'n.*)
Wisconsin & Minnesota R. R. (*See Wis. Cen.*)
Wood River Branch R. R. 4-8½ g. 6 m. 2 lo. 3 cars.
L. M. Barber, *Supt.* ....Hope Valley, R. I.
Woodstock R. R. 4-8½ g. 14 m. 1 lo. 3 cars.
J. G. Porter, *Supt.* ....Woodstock, Vt.
Worcester, Nashua & Rochester R. R.
4-8½ g. 95 m. 20 lo. 523 cars.
C. S. Turner, *Pres. & G. Man.* Worcester, Mass.
G. W. Hurlburt, *Supt.* ....Worcester, Mass.
John G. Brady, *M. M. & C. B.* Worcester, Mass.
Worcester & Shrewsbury R. R. 3 g. 3 m. 3 lo. 9 c.
J. F. Bigelow, *Supt.* ....Worcester, Mass.
G. E. Hapgood, *Pur. Agt.* ....Worcester, Mass.
Chas. Cleveland, *M. M.* ....Worcester, Mass.
Worcester & Somerset R. R. (*See N. Y., Phil. & Nor.*)

Y

York & Peach Bottom Ry. 3 g. 40 m. 5 lo. 100 c.
S. M. Manifold, *Supt. & Pur. Agt.* .....York, Pa.
G. W. Hoover, *M. M.* ....York, Pa.

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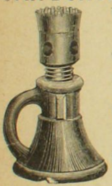

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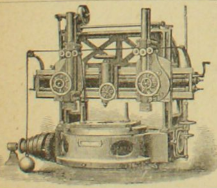

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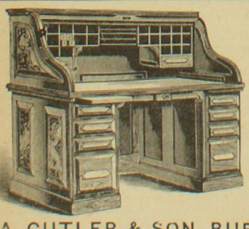

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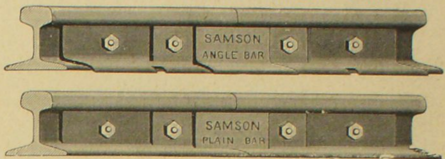

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